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Restriction Rouses the Big Ones

THE expected happens. Through the Stevenson Plan the price of crude rubber doubles. British rubber manufacturers, hit hard, clamor for protection against American and French competition in their home markets and will doubtless get it. Thus the cost of rubber goods in the United States is greatly increased and a big export market is threatened. While the big associations protest and confer, Henry Ford and Harvey Firestone, so it is said, plan to act and on a big scale. Mindanao, the great tropical island of the Philippines group, is to be again examined as a Hevea planting possibility. There are already plantations at Basilan enough to furnish seed for large areas. Soil and climate leave nothing to be desired. If land laws and labor laws can be amended and some assurance of future protection be given, Mindanao can soon be another Sumatra in its rubber production. If not, Brazil will doubtless welcome those who would plant the vast fertile lands at the mouth of the Amazon; or Venezuela might permit the opening up of the lands in the Delta of the Orinoco. Nor does this by any means exhaust the areas where the Hevea will flourish as well as in the Malay States. There is Western Mexico, Guatemala, Panama, Ecuador, and Colombia. It is said that all of these areas are to be given careful scrutiny.

The American rubber manufacturer has in the past taken what was given him. High prices or low prices, he did not revolt. But today when both tire manufacturer and the creator of the "Flivver" are threatened, come protest, action, revolution.

Rubber Milk Threatens Crude Rubber

WHETHER rubber milk in barrel or in tank will take the place of crude rubber is not yet apparent. In the light of recent experiments, however, its use promises to be very large. The collection, handling, and shipping are in reality quite simple. The processes of straining, adding an anti-coagulant, barreling or pouring into tanks, transportation to tank steamers, pumping into tank cars at the port of destination, and storing in tanks at the factory, are singularly few.

As against this in the production of crude rubber is straining, coagulating, slabbing, crêpeing or sheeting, drying, smoking, grading, packing in splinter-proof boxes, insuring against fire, transportation by train to steamer, handling by stevedores, unloading at destination, reloading on cars (stealing by stevedores and dock workers), and resampling at the warehouse.

Actually at the present time there are many points in favor of latex in place of crude rubber. No one will steal it and it would have to be costly indeed to encourage caoutchouc bootlegging. It is not inflammable as is crude rubber and therefore the fire risk is nil. It will not spot, mildew, or develop tarry spots. Its value can be very easily approximated by a metrolac, or it can be evaporated and estimated in any laboratory, a small sample determining the quality of the whole shipment. It also brings the planters at the present prices a better profit than does crude rubber.

Of course the above relates to latex from the planted Hevea, handled intelligently and honestly. Given a big business in rubber milk, a great many grades are sure to be created. The *Dyera Costulata*, from which comes Pontianak, is, for example, a most abundant milker, producing quarts where the Hevea gives teaspoonfuls. It is, however, a rubber latex and either alone or mixed with Hevea will probably appear on the market. So, too, will the latices of the Ficus and of many of the lesser rubber producers undoubtedly be called upon to make money for those who sell rubber milk.

Whether or not this eventuates, one of the important things is to establish definite grades as fast as they appear, under names that are descriptive if possible, but anyhow that are not misleading. It will be recalled that the name "First Latex Crêpe," in spite of attempts to change it has stuck, although in reality it really means first grade. While on the topic, the suggestion that bulking stations for rubber latex be established in Great Britain is of interest and will perhaps be done. For American consumption, however, collecting tanks in New York, Boston, San Francisco, or Los Angeles, where latex could be pumped directly from the steamer, with a spraying tank close at hand for coagulation, would be a great money saver and give the American trade a better grade of rubber than it has ever had.

The Director of Agriculture of the Federated Malay States in a recently published report makes some interesting observations. He remarks that "what manufacturers do complain of as regards plantation rubber is not that it is not good, but that it is not uniform as regards the qualities on which they depend in the manufactured article. Each lot of plantation Pará they buy has to be treated differently from the last lot, otherwise their final product is not of the same quality. The number of factors which may influence the quality of rubber are extremely numerous and no one can say at present which of them are and which are not effective. Obviously the first thing to be done is to study every one of these factors separately, determine which of them are influential, then see whether any or all of them can be eliminated in estate practice." The bulking of latex would do away with variability.

It might also prove a solution of the rubber planter's difficulties with regard to price and distribution of their product. Under, in some respects, dissimilar conditions but designed to achieve a similar end, the citrus growers have perfected a selling system that is as unique as it is effective. Under it the orange and lemon planters control the marketing of their products from orchard to retailer or jobber in such a way as to yield the maximum price and promptly dispose of each season's crop. The system might have to be considerably modified to conform to the case of the rubber latex, but it would seem as if the planters might profitably study the achievements of the California Fruit Growers' Exchange, not to mention the cooperative sales plans of the cotton planters in many southern states.

The foregoing refers to latex from tree sources. There is the possibility, however, of a so-called latex from crude and perhaps reclaimed rubber. Thus the announcement that a brilliant industrial chemist has produced dispersed rubber, in other words, that he can change crude rubber into rubber milk, is of great importance. If the cost of such transformation is not too high, it may solve the problem of latex supplies for the various industries that are beginning to use it in quantities. It will also have a marked effect upon certain rubber manufacturing processes and those that are closely allied to them.

Time was when fabric surfaced either with rubber in the form of rubber coats or with boiled linseed oil in the form of slickers, were the only waterproof garments used. Then came the cravenette process, which filled the fabric with paraffine, rendering it showerproof. To an extent paraffine ousted rubber. With latex or dispersed rubber, however, it is perfectly possible that a showerproof fabric can be made far superior to the Priestley product, valuable though that be.

In its mechanical aspects the new processes may also possibly upset time honored customs. Using latex or dispersed rubber there would be no necessity for washers, as the product would come clean. It would seem also as if the present day mixer would be ousted by the solution mixer or churn. To what extent the spraying or the pouring of the dispersed rubber over webs of fabric will encroach upon the spreader and the calender it is impossible to say.

Of course the abolition of present machines and processes would be slow, if ever, and their places would be taken by machines adapted to handling of liquids rather than solids.

The most fascinating possibility in the process lies in the substitution of water for solvent naphtha. This would be a distinct saving in money, be more healthful for the employes, and would notably lessen fire risks.

Horace DeLisser President Rubber Association

AGAIN the Rubber Association selects as its president one in every way worthy. Horace DeLisser, motor magnate, rubber manufacturer, man of affairs, thoroughly conversant with business conditions at home and abroad, brings to his high office qualifications that promise much for the future of the greatest of rubber organizations.

A HOST OF TIME-KILLERS IN THE RAILWAY AND MARINE service in France have lately received a rude jolt from the Ministry. That body has made sleeping on the job a precarious pastime by ruling that to be entitled to pay men must not merely report for service but actually render it; that an 8-hour day means 8 hours of actual work performed. To be merely ready for an assigned task gives a worker no claim on the paymaster. Many an employe needs to be taught the lesson, that his pay depends upon something more than clock-punching.

WE HAVE BEEN URGED BY RELIGIOUS ORGANIZATIONS to publish each month a verse from the Bible. In reverence for the "Book of books," with the firm conviction that its wisdom applied to daily life would solve all problems, we have consented. The verse for this month is:

"Therefore all things whatsoever ye would that men should do to you, do ye even so to them."—*Matthew, 7*:12.

The Rubber Association of America

Twenty-Third Annual Dinner

THE Twenty-third Annual Dinner of The Rubber Association of America, Inc., will be long remembered in the industry as an event unsurpassed in the association's annals. It was held on the evening of January 8, 1923, at the Waldorf-Astoria, New York, N. Y., when nine hundred members and guests enjoyed a delicious menu and an entertaining program of unusual interest.

The Postprandial Exercises

Following the dinner, the postprandial exercises were opened by the retiring president, Harry T. Dunn, who proposed that all rise out of respect to the President of the United States, the orchestra playing "The Star Spangled Banner" meanwhile. He then read a letter from President Harding alluding to the Aladdin-like development of the rubber industry, its sufferings during the deflation period, and the courage, steadfastness and determination of its leaders, who have been largely responsible for its rapid resumption of prosperity, and expressing his regret that public duties prevented accepting the invitation to attend the dinner.

Congratulating the association on the ability and experience of its new leaders, Mr. Dunn introduced President-Elect Horace DeLisser, who expressed briefly in a few well-chosen words his appreciation of the consideration and honor which had been bestowed upon him, and in turn introduced as the toastmaster of the evening former United States Senator Charles A. Towne, of Minnesota.

Hon. George H. Moses

Hon. Carroll L. Beedy

Hon. Pat Harrison

Charles A. Towne, Toastmaster

Toastmaster Towne's Address

Mr. Towne in his brilliantly well chosen remarks soon convinced his audience that the most modest toastmasters are usually the best, and in resolving not to be funny gave freely of his spontaneously keen wit instead.

Every day, he stated, it becomes more and more patent that business is increasingly politics and politics is increasingly business. American business men are not taking active enough interest in politics. There would have been more competent leadership at Washington had they taken pains to disturb things at home. In consequence we have wandered away from the old pathway of American political thought and action.

American Isolation Impossible

Following the assertion that we are trying to do too many things by law, and some pertinent remarks on the results and influences of subordination of the Constitution to that end, he turned to our position as a member of the great family of nations, saying in part:

> Our prosperity at home here, signally contrasted with that which most of the rest of the world at this moment is denied, is disguising in a very large degree to us the real condition of things on the other side of the world. But, my friends, we are coming increasingly to realize this: that with the evolution of society from the family to the clan, from the clan to the tribe, from the tribe to the nation, and from the nation to the federation, we are coming finally to that conception which makes the family of mankind co-extensive with the world and makes everybody's business your business, if you are going to have any business with anybody.
>
> Talk about isolation! Every breakfast table advertises the community of mankind and every administration that gets into Washington on the theory that it can play the ostrich and put its head under the sand will soon find by a collision with an exposed anatomy that its isolation is impossible.

Congressman Beedy's Address

Congressman Carroll L. Beedy, of Maine, spoke with forceful intelligence on "The Government's Desire to Aid Business by Constructive Legislation." Laws, he said, ought to bespeak the crystallized sentiment and best opinion of the people in our free government, and in these days of ultra-radicalism everyone should seek to form and defend correct opinions and to express them through the methods provided under the Constitution and by the law-making bodies of the nation. He was not, he admitted, in a position to state exactly what the government intended to do for business, but he ventured some opinions as to what ought to be done.

Tracing down through the ages the contending forces of personal and public interest, he came to the tendency of our present laws to repress the natural operation of business and the actual danger in the freedom of the individual to make an honest investment and then protect it by an honest attempt to live within the law without an unjust interference by law. Briefly he reviewed the operations of the Sherman Anti-Trust Law, the

The Rubber Association Banquet

Twenty-Third Annual Dinner of The Rubber Association of America, Inc., at the Waldorf-Astoria, New York, N. Y., January 8, 1923

Federal Trade Act, the Clayton Act, and their varying interpretations by the Supreme Court, which, with long-suffering business, has been trying to determine what is reasonable and what is unreasonable in respect to competition and price maintenance. These laws, he believed, were necessities of the times and had on the whole done much to benefit honest business, but the danger was that the Supreme Court in its decisions was carrying the spirit of these laws far beyond what it was ever originally designed to be. Competition could reasonably be limited, he believed, without restricting trade, and the test ought to be whether the effect of the business policy pursued is to limit the total volume of trade.

Too Much Government Interference

Business needs aids through constructive legislation, he asserted, but its principal need is to be let alone by tinkering law-making bodies, and he believed that the government is becoming more anxious to see that business has an opportunity to develop in consonance with economic laws and that unreasonable restrictive and repressive legislation cease. Continuing, he said in part:

There is much that government can do for business. There is much, if not more, that business can do for itself. I think the first thing is incumbent upon business men in this country, aside from measuring up more as they ought to the responsibilities of citizenship proper, is to get out of their heads this idea—that the moment something goes wrong with business the government is to blame for it. Government can't create a demand for production; it can't create a thing that is worth one dollar in value; the most that government, I submit, ought to do is to pass such laws to serve, as it were, for business as a track along which business may run with the least friction possible, and I think that business rides the track best when government interferes the least.

Tax Reforms Needed

Pointing out that great tax reforms are needed, not by Congressional committee but by a commission of experts, he said:

We ought either to simplify the system or we ought to find out if it is as a matter of fact impossible to simplify it, and if it is impossible to simplify this taxation program under which we now live, then business ought to be dealt thus fairly with: The government ought certainly, in justice to all business, to pass a law which in substance proclaims that when a tax is once paid by business for a year past, and that tax money accepted by the government, that that ought to close the matter and that business ought to be relieved of the bugaboo, the fear, in laying out its program for the next year, of having to go back, at the insistence of the government, and pay from ten thousand to a hundred thousand dollars more in past taxes for a year gone by.

Income Distinctions Should Be Made

That is one thing we ought to have. There is another thing that I believe we have got to come to in this country. Do you know that we are the only nation on the face of the globe that in its taxing program fails to make a discrimination between income that is earned and income that flows from property that was given to somebody, and do you perceive the injustice of it? A man that has to earn every bit that he gets is striving not only to meet the needs of the day and the hour, but he is seeking to set aside a capital, some principal to serve as a fund for his dependents in the hour of stress or in the event of his death; but you tax him on a sliding scale, showing him no consideration, while the man who has already provided for the future, has his capital laid aside for his dependents in the event of his death, is taxed only the ordinary straight tax that you impose on common property as such, and you tax him simply for the income that flows from it, as you tax the man who earns every dollar he has in the world.

Do you see the injustice and iniquity of it? You have got to have a discrimination some day, favoring the man whose sole possession and whose sole hope is what he earns, apart from the man whose capital is already laid aside for him by his ancestors and handed on to him.

Railroad Relief Necessary

I think that we have got to do something for the railroads of this country. Just think of the inconsistency to which we have gone in the enactment of laws. So late as February, 1922, I believe, we passed the Capper-Volstead Act. Under the terms of that act we permitted farmers, fruit-growers, agriculturists in general, to combine either in associate or corporate form, to act in unison and through cooperation to provide for a more advantageous marketing of their products, and we limited them in the dividends which they could declare to eight per cent.

Now, then, in March, 1920, we added an amendment to the then existing Interstate Commerce Law. We limited the railroads for a period of two years to come to an income, on their valuation to be determined by the Interstate Commerce Commission, of five and three-quarters per cent. They might allow them another quarter of one per cent for betterments, but every penny that they earned beyond six per cent, then they could only have one-half of it as a sinking fund for the road in question which earned it, and the other half must be turned over to the Interstate Commerce Commission to be doled out in loans by it to the weak links of the railroad system.

Now about forty per cent of the railroads in the nation earn five and three-quarters per cent interest on their valuation, and the other sixty per cent are not earning it, and they are creating the gaps and the breaks in the transportation system. The Secretary of Commerce in his last report called the attention of the American people to the fact that in one year's time because of car shortage,—the failure, the inability of railroads to provide utilities, and the cars to do the business,—the business of this country has paid the bill; it had cost the nation in a year's time as much as it cost to run the whole government for a year. He called your attention to the lift in the price of coal to the tune of 600 per cent, from the time it left the mine until it was delivered to the consumer, largely caused by car shortage. He called your attention to the fact that after the termination of the coal strike, because of car shortages in the last four months, there has been a lift in the price of coal of 60 per cent.

Present Situation Inconsistent

Then we started out to enact this Sherman Law, to prevent monopolies, in order to save competition, but now we have met ourselves coming back, I submit. What was the benefit of competition? Why, the theory was that competition would keep down prices; and yet now you regulate and fix the prices which railroads shall charge for transportation and you limit the income which they shall enjoy upon their valuation, and therefore make it unnecessary to have any competition in the world of railroad business.

Senator Moses' Address

With searching witticisms and convincing logic Senator George L. Moses, of New Hampshire, speaking on "The Sales Tax," decried the fact that lawmakers are invading fields far from those which the founders of the United States laid out for the American people; that they are destroying the initiative and enterprise of the states and trespassing upon the activities and privileges of citizens.

Present Taxation System Wrong

This country, he said, is traveling around in a vicious circle of imprudent public expenditures upon which has been based our present system of taxation, which he denounced as utterly wrong. Of the faults of the present system, based on an outworn model under the pressure of war necessity, he spoke in part as follows:

So long as we maintain a system of taxation wherein six states pay 62 per cent of all the burden of the support of the Federal Government, so long the other 42 states in the Union are going to sit up nights to devise means to get the money of the other six states away from them.

We now live under a system of taxation whereby the surtaxes laid upon business and enterprise mount today, as they have always mounted, to a higher figure than that laid upon the business and enterprise of any other country in the world.

We live under a system of taxation in this country where individual enterprise is shackled, where thrift is strangled, where there is no incentive for the great American spirit which made this country great and prosperous to go out into the fields of endeavor and open new avenues for activity and progress. We have lately brought back into our body politic four millions of young men who wore the khaki of the army who fought in the world war. I cannot help thinking, Mr. Toastmaster, of the difference which those young men found when they came back to take up the duties of civil life, as compared with the conditions which met the young men who wore the Union blue a half century ago. Those men who came back from the battles of the Civil War, whose spirit of adventure had been quickened, in whom the habit of command had been developed, were then permitted to go out into the open

stretches of the Middle West, and there, through the exercise of their individual gifts, to build up those great commonwealths which are the admiration and despair of the world.

Today the young man who came back from overseas and doffed the khaki, found his own government in competition with him because we have thrust government into business and have restricted the avenues in which men may work and enjoy the fruits of their labors.

That condition of things grows out of a system of taxation, the folly of which may best be illustrated, gentlemen, by the statement of the simple fact that the men who drew the tax law under which we live cannot fill out their own income tax blanks.

As I have seen the operation of the law which I condemned, as I have watched the receipts under it steadily diminish, as I have seen the strenuous efforts on the part of those who bear most heavily the burdens which it lays to get out from under,—in short, as I have seen the governmental incentive to falsehood which the present tax law produces, I have become more and more convinced that such a law, besides being inequitable, unjust and unproductive, is also unsuited to the spirit of a country like ours.

The Sales Tax Ideal

A tax, if it is to be ideal, should be a tax bearing equally upon all, widely distributed, easy to collect, and productive in its results. Such a tax I believe is to be found in the sales tax. Under such a tax, every citizen will bear his just proportion of the public expense, because under a sales tax, gentlemen, we shall take from each man in the exact measure of his capacity to buy, which I insist is an absolute and exact criterion of his ability to pay.

Under it we shall have at frequent intervals, with ease of collection, without the services of an army of tax eaters masquerading as experts, a constant golden stream flowing into the Treasury and making every man feel the expense of the government under which he lives.

Senator Borah Unable to Attend

At this point Toastmaster Towne read a letter from Senator William E. Borah, of Idaho, who was to have spoken on "Russia," expressing his regret at not being able to attend, and, following some senatorial pleasantries, introduced Senator Pat Harrison, of Mississippi, floor leader of the Democratic party.

Senator Harrison's Address

Senator Harrison, speaking on general conditions, regaled his hearers with much good natured bantering directed at the administration and the senate in general and his friend Senator Moses in particular. Also he told a few of his inimitable stories, which are always apropos.

In more serious vein, he asserted that despite the occasional acrimonies of debate the friendliest of personal feeling exists between members of the contending parties in the Senate, and that, though honest differences of opinion very properly occur,—such, for example, as the advisability of subsidizing American shipping,—when the crisis is reached on any important matter party lines are forgotten and the proposed measures are voted unanimously where the interest of the country is at stake. The American Government is all right, he believed, it mattered not what political party may be in the ascendency; the wisdom of American statesmanship will steer it in the end to safe voyage and prosperity.

America's Dominating Place in World Affairs

Alluding to chaotic world conditions halting business and making future plans uncertain in every trade, he said there was a key to the situation and he believed it would be found. Said he:

No sane American can believe, conscientiously, that the interests and welfare of other peoples and other countries are of no concern to us! Our international trade, reaching and stretching and projecting through its channels of commerce into all the markets of the world, are but nerves in a great and delicate and sensitive world system, and what affects the nerves in those markets will be reflected in the nerve center in the great country of which we are a part.

I am not unmindful of the fact that there is a difference of opinion, and always will be, as to how far, as to what extent this country should manifest its interest or project its relationship into the affairs of other peoples and other countries. We may differ as to the method to be employed, as to the policy that it is wise to adopt, but we all must agree with the commanding and dominating position in the affairs of the world, in trade, and in commerce and finance, that we occupy; that we cannot turn a deaf ear to the appeals of other countries when they come to us, or to cooperate with them through giving advice and counsel when it is necessary.

And I am sure you today, as every business man from one end of this country to the other, read most welcomely and as glad tidings of good news, the announcement from the White House that this administration had extended to France and to the other countries in Europe an invitation to join in a conversationary conference—or call it whatever you will—of commissioners appointed from the business people of the countries involved!

My friends, we have spent millions of dollars of the taxpayers' money; our statesmen have given of their talents and their time in trying to build up a foreign trade in foreign markets; it has been reflected in magnificent gold reserves and a wonderful balance of trade in our favor. And I speak to you tonight not as a Democrat but as an American, with the ardent hope that the invitation extended by this government for a conversation with the nations involved will be accepted and that it will lead the way to stability and normalcy in world affairs.

Seated at the President's table were the following prominent men that represented the government, the automobile, and the rubber industries of the United States and Canada:

A. O. Bourn, Bourn Rubber Co.; J. S. Broughton, United & Globe Rubber Co.; G. B. Dryden, Dryden Rubber Co.; J. S. Lowman, Philadelphia Rubber Works Co.; W. A. Eden, Canadian Consolidated Rubber Co., Limited; H. S. Hotchkiss, General Rubber Co.; William O'Neil, General Tire & Rubber Co.; F. R. Henderson, F. R. Henderson & Co.; S. G. Lewis, Pennsylvania Rubber Co.; G. M. Stadelman, Goodyear Tire & Rubber Co.; Hon. George H. Moses, U. S. Senator, New Hampshire; Horace DeLisser, Ajax Rubber Co., Inc.; Hon. Pat Harrison, U. S. Senator, Mississippi; H. T. Dunn, The Fisk Rubber Co.; Hon. Charles A. Towne, Toastmaster, former U. S. Senator, Minnesota; Hon. Carroll L. Beedy, U. S. Representative, Maine; W. O. Rutherford, The B. F. Goodrich Co.; R. D. Chapin, National Automobile Chamber of Commerce; B. B. Bachman, Society of Automotive Engineers; E. H. Broadwell, Motor & Accessory Manufacturers' Association; F. A. Seiberling, Seiberling Rubber Co.; A. H. Brown, Meyer & Brown; F. C. Hood, Hood Rubber Co.; G. B. Hodgman, Hodgman Rubber Co.; M. W. Alexander, National Industrial Conference Board; Merrell E. Clark, Counsel, Rubber Association of America.

Rubber Growers' Committee Here for Conference

On January 17 the delegation representing British rubber producers' interests and composed of Sir Stanley Bois, P. J. Burgess, and H. Eric Miller, arrived in New York. The first meeting was held on January 19, with a committee made up of American rubber manufacturers, these including H. Stewart Hotchkiss, United States Rubber Co.; B. G. Work, The B. F. Goodrich Co.; William O'Neil, General Tire & Rubber Co.; P. W. Litchfield, The Goodyear Tire & Rubber Co.; A. H. Brown, Meyer & Brown; William F. Pfeiffer, Miller Rubber Co.; and Horace DeLisser, Ajax Rubber Co.

On Monday, January 22, the visitors, accompanied by A. L. Viles, secretary and general manager of the Rubber Association, started on a trip to leading American rubber centers, beginning with Trenton, New Jersey. They plan to visit Akron, Ohio; Detroit, Michigan; and the rubber manufacturing centers of New England. It is hoped that as a result of this conference some agreement will be reached which will greatly ease the unfortunate conditions at present prevailing in the crude rubber situation.

Annual Meeting of the Rubber Association

Officers' Reports—Budget for 1923—Election of Directors and Officers —Crude Rubber Restriction—Cost Accounting—Division Meetings

THE annual meeting of the Rubber Association of America, Inc., convened at the Waldorf-Astoria, New York, N. Y., at 3.10 p. m., January 8, 1923, President Harry T. Dunn, presiding. Formalities such as the reading of the call for the meeting and of the minutes of the previous meeting were dispensed with on motion from the floor. The reports of the president, treasurer, secretary, and general manager, having been printed and distributed, were not read but unanimously approved.

Treasurer George B. Hodgman merely commented on the fact that expenses for the year had been $32,017.99 less than income and pointed to the association's improved financial condition, including its list of investments.

The Budget for 1923

J. Newton Gunn, chairman of the Budget Committee, called for an expenditure of $113,000 for operating expenses and $36,500 for contributions, making a total of $149,500, compared with actual expenditures in 1922 of $89,000 for operation and $48,500 for contributions, a total of $137,500. Contributions for the present year include the Highway Education Board, Motor Vehicle Conference Committee, and National Industrial Conference Board. Some moderate but well deserved salary increases are provided for and it was anticipated that there would be rather large additional Tire Division publicity to provide for.

This budget was duly approved, and on motion of F. C. Hood the manufacturers' fee on crude rubber to provide funds to carry out the budget was again fixed at three cents a hundred pounds for the year 1923.

Election of New Directors

The Nominating Committee placed before the association the names of ten firm members from whom to elect five directors to serve for three years. The balloting resulted in the election of W. O. Rutherford, vice-president of The B. F. Goodrich Co. (reelected); H. Stuart Hotchkiss, president of the General Rubber Co. (reelected); William E. Bruyn, treasurer of L. Littlejohn & Co.; George B. Dryden, president of the Dryden Rubber Co.; C. E. Stokes, president of the Home Rubber Co.

Crude Rubber Restriction

H. Stuart Hotchkiss, chairman of the Special Committee on Crude Rubber Restriction, reported that in response to his committee's invitation the Rubber Growers' Association of London is sending to this country a representative delegation of three members for the purpose of studying the situation and conferring with American manufacturers. The delegation will remain in the United States about three weeks, and a series of meetings will be arranged in New York, Akron, Trenton, New England, and possibly elsewhere in order that every association member may meet the delegates and express their views.

Commenting on the importance of the crude rubber situation, Mr. Hotchkiss pointed out that "the fundamental essential is that America should obtain its supplies of crude rubber at reasonable prices, not only now but in the future." Continuing he said in part:

> It cannot be denied that when rubber was selling at 8*d* or even 10*d* the return to the planter was not sufficient to make it possible for many existing plantations to continue indefinitely. Furthermore, practically no new planting has taken place for some years, owing to the failure of this industry to attract new capital. Consumption is steadily increasing; herein lies the greatest danger of all.
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> The planting industry knows that unduly high prices will curtail consumption and discourage new uses for rubber, and American manufacturers understand, no less clearly, that no greater menace can exist for them than a price level so low as not to support the planting industry and attract new capital for expansion. While the Committee of the Rubber Growers' Association has no power to abrogate or change the action taken by the British Colonial Government, it is felt that any recommendations that they may make will carry great weight with the Advisory Committee appointed by the British Colonial Office in accordance with the Stevenson Plan.
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> Every effort is being made to either have restriction wholly abolished, on the ground that increased consumption no longer renders it necessary for the maintenance of a fair price level, or, failing this, to have the existing plan so modified that stabilized prices at a reasonable level will be assured beyond a doubt.
>
> We hope that this committee will carry away with them a picture of the American industry as it really exists. There is just as much misconception on the other side of the Atlantic Ocean in connection with our activities as exists here in connection with theirs. The British planter has felt for some time that the American manufacturer was his natural enemy. They have felt that we are all in one great consolidation, that we buy together and stay out of the market together as suits our condition and with utter disregard to their interests. This, of course, is just as absurd as it is absurd that the British planter has combined in this particular case to squeeze the manufacturer.
>
> It is a situation that, I think, will be clarified by a frank understanding between the groups and we hope the members of the association will avail themselves of this opportunity to meet this delegation and to express themselves very freely in regard to any points or matters that may come up.

An interesting discussion followed in which Messrs. Lewis, Kearns, and Hotchkiss participated. At the suggestion of F. C. Hood, Mr. Hotchkiss explained the present basis of crude rubber export and quoted a letter from Eric Miller, a member of the Stevenson and other British rubber committees, stating that if the price is maintained at an average of 15 pence per pound, the restriction scheme would be effective as follows:

November, 1922, to January, 1923	60 per cent
February, 1923, to April, 1923	65 per cent
May, 1923, to July, 1923	70 per cent
August, 1923, to October, 1923	75 per cent
November, 1923, to January, 1924	80 per cent

If the price averages 18 pence in any quarter the increase for the succeeding quarter is 10 instead of 5 per cent, and if an average of 18 pence were maintained after the first six months, the scheme would become effective as follows:

November, 1922, to January, 1923	60 per cent
February, 1923, to April, 1923	65 per cent
May, 1923, to July, 1923	75 per cent
August, 1923, to October, 1923	85 per cent
November, 1923, to January, 1924	95 per cent

In other words, with rubber maintained at 18 pence practically full production would be assured.

Mr. Hotchkiss stated that his committee is doing everything possible to cooperate with the British planting interests and the United States Government with the idea of having the present restriction removed, or, failing that, to introduce more elasticity for the protection of American manufacturers. The committee believes that British planters are anxious to see this restriction removed as soon as it can be and is bringing all possible pressure to bear to show that in the light of increased American consumption and imports the restriction is no longer an economic necessity. What the committee is particularly apprehensive of is that while the planting interests may be acting in good faith, economic conditions may create a shortage of rubber which will put prices up regardless of the restriction scheme.

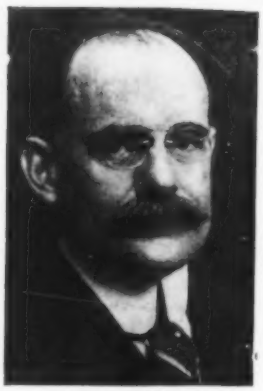
Officers and Directors of The Rubber Association, 1923

W. O. Rutherford
First Vice-President

Horace DeLisser
President

G. M. Stadelman
Second Vice-President

J. Newton Gunn



George B. Hodgman
Treasurer

A. L. Viles
General Manager-Secretary

F. R. Henderson

H. Stuart Hotchkiss

F. A. Seiberling

J. W. Thomas

Harry T. Dunn

J. S. Lowman

G. B. Dryden

W. E. Bruyn

W. O'Neil

S. G. Lewis

Portrait of Charles E. Stokes, a director, not available.

Asked by Mr. Lewis as to the average cost of rubber and what he considered a fair price, Mr. Hotchkiss replied that not costs on individual estates but the average cost over the whole producing area must be the cost basis, and that a fair price must be one which will attract new capital to the planting industry, because the steadily increasing rate of consumption must be met, and, with prices where they were, at 8 or even 10 pence, there have been no new plantings within the past few years to supply the additional requirements.

Mr. Kearns raised the matter of coolie wages in the East, now said by Mr. Hotchkiss to be about 40 cents a day as compared with about 18 cents a day in 1910 when rubber was selling for $3 a pound. The present situation, Mr. Kearns asserted, has been brought about largely by constant American pressure to force rubber below the prevailing market, whatever that might be. As a result, he said, planters have contributed millions of dollars annually not to manufacturers, as company reports for the past two years have shown, but to the public, and he believed that the planters were taking a proper stand. Said he in conclusion:

I heartily approve of the stand that they have taken and I believe that the rubber industry would be stabilized better if a price of about forty cents a pound was maintained regularly. That would give the fellows in the East a chance to make some money and also the rubber manufacturers. Those who have followed statistics know that for the past fifty years rubber has averaged about 75 cents a pound, and these big concerns that have grown big and powerful have done so when they paid high prices for their rubber. It was true that commodities were higher, but I believe that the trade was better stabilized. I believe we have had worse conditions in the rubber business since rubber became low than we ever had before.

Cost Accounting

General Manager Viles explained that in the belief that a great lack of uniformity in accounting exists in the various rubber factories, an accounting committee appointed by the president had been engaged for more than a year on conference work and some analysis with a view to ascertaining if it would be profitable to the industry to develop certain definitions or fundamental classifications of accounts and general cost accounting practices, such as have been carried out successfully by many trade organizations. The committee found that considerable investigation and analysis would be required which members could not undertake in justice to their own companies and asked for an appropriation of $8,000 to $10,000 to employ expert accountants to examine the methods of a representative number of plants on which to base a recommendation. This project was referred to the membership by a letter, to which 81 responses were received, 69 being favorable to proceeding with the work.

On motion of Mr. Gunn the matter was referred to the incoming board with power and the favorable recommendation of the meeting.

Banquet Committee Report

Chairman DeLisser briefly outlined his task of arranging for this year's banquet program, announced the list of distinguished speakers and in their behalf, seconded by President Dunn, bespoke the respectful attention of every member attending.

Election of Officers

Immediately following the general meeting, the Board of Directors met in another room of the Waldorf-Astoria and officers of the association for the year 1923 were elected as follows:

President, Horace DeLisser, chairman of the board, Ajax Rubber Co.

First vice-president, W. O. Rutherford, vice-president, The B. F. Goodrich Co.

Second vice-president, G. M. Stadelman, vice-president Goodyear Tire & Rubber Co.

Secretary and General Manager, A. L. Viles (reelected).

Treasurer, George B. Hodgman, president Hodgman Rubber Co. (reelected).

Division and Committee Meetings

Tire Manufacturers' Division

The annual meeting of the Tire Manufacturers' Division was held at the Yale Club, January 9, at 1 p. m.

To succeed J. C. Weston, as chairman of the Tire Manufacturers' Division, E. H. Broadwell, vice-president of the Fisk Rubber Co., was elected, with L. G. Fairbank, general sales manager of the Firestone Tire & Rubber Co., as vice-chairman, succeeding J. V. Mowe, of the Kelly-Springfield Tire Co. The following companies were elected members of the Executive Committee of the Tire Manufacturers' Division for the year 1923:

Fisk Rubber Co.	Kelly-Springfield Tire Co.
Firestone Tire & Rubber Co.	Lee Tire & Rubber Co.
Ajax Rubber Co., Inc.	Michelin Tire Co.
General Tire & Rubber Co.	Miller Rubber Co.
The B. F. Goodrich Co.	Norwalk Tire & Rubber Co.
Goodyear Tire & Rubber Co.	Pennsylvania Rubber Co.
Hewitt Rubber Co.	Seiberling Rubber Co.
Hood Rubber Co.	Swinehart Tire & Rubber Co.

United States Tire Co.

Foreign Trade Division

The annual meeting of the Foreign Trade Division was held at the Yale Club, January 8, at 12 M.

A. G. Cameron, of the Goodyear Tire & Rubber Export Co., was elected chairman of the Foreign Trade Division, to succeed F. E. Titus of the International B. F. Goodrich Rubber Corp., and K. S. Chamberlain, of the Fisk Rubber Co., was elected vice-chairman to succeed H. G. Lubke, of the General Tire & Rubber Co. The following were elected members of the Executive Committee of the division for the year 1923:

A. G. Cameron, Goodyear Tire & Rubber Export Co.
K. S. Chamberlain, Fisk Rubber Co.
A. R. Gormully, Ajax Rubber Co., Inc.
C. E. Wagner, Miller Rubber Co.
E. Salisbury, Brunswick-Balke-Collender Co.
D. D. F. Yard, Pennsylvania Rubber Co.
E. H. Huxley, United States Rubber Export Co.
Sam Broers, Firestone Tire & Rubber Co.
F. E. Titus (ex officio), International B. F. Goodrich Corp.

Rubber Proofers' Division

The annual meeting of the Rubber Proofers' Division was held at the Yale Club at 12 M., January 9.

J. H. Mason, of the Vulcan Proofing Co., was reelected Chairman of the Rubber Proofers' Division and Warren MacPherson, of the Cambridge Rubber Co., vice-chairman. The other members of the Executive Committee are:

N. L. Green, Clifton Manufacturing Co.
L. A. Beecher, J. C. Haartz, Inc.
S. G. Byam, Plymouth Rubber Co.

Rubber Sundries Manufacturers' Division

The annual meeting of the Rubber Sundries Manufacturers' Division was held at the Yale Club, January 9, at 1 p. m.

W. H. Balch, of the Faultless Rubber Co., was elected chairman of the Rubber Sundries Manufacturers' Division for the year 1923, succeeding H. A. Bauman, of The B. F. Goodrich Co.; W. S. Davison, of the Miller Rubber Co., was elected vice-chairman. With the chairman and vice-chairman, the following compose the Executive Committee for the ensuing year:

H. A. Bauman, The B. F. Goodrich Co.
F. H. Jones, Tyer Rubber Co.
P. R. Wesley, Devol Rubber Co.
J. W. Kuhne, Hodgman Rubber Co.
H. H. Reddy, Whitall-Tatum Co.

Mechanical Rubber Goods Manufacturers' Division

The annual meeting of the Mechanical Rubber Goods Manufacturers' Division was held at the Yale Club at 10 a. m., January 8.

C. E. Cook, vice-president of The B. F. Goodrich Co., and C. D. Garretson, general manager and treasurer of the Electric Hose & Rubber Co., were reelected chairman and vice-chairman, respectively, of the Mechanical Rubber Goods Manufacturers' Division for the year 1923. The following, with the chairman and vice-chairman, compose the Executive Committee of the division:

J. H. Cobb, New York Belting & Packing Co.
G. E. Hall, Boston Woven Hose & Rubber Co.
D. R. Burr, Goodyear Tire & Rubber Co.
J. A. Lambert, Acme Rubber Manufacturing Co.
F. D. Voorhees, Voorhees Rubber Manufacturing Co.
C. C. Case, United States Rubber Co.
J. H. Kelly, Hewitt Rubber Co.

Footwear Division

The annual meeting of the Footwear Division was held at the Yale Club, January 8, at 12 M.

George H. Mayo, vice-president of the United States Rubber Co., and F. S. Dane, of the Hood Rubber Co., were reelected chairman and vice-chairman, respectively, of the Footwear Division for the year 1923.

Special Crude Rubber Committee

The Special Crude Rubber Committee, appointed by the Board of Directors of the Association to handle the question of the restriction of crude rubber production by the British Government, which was composed of H. Stuart Hotchkiss (chairman), president, General Rubber Co.; B. G. Work, president, The B. F. Goodrich Co.; Horace DeLisser (chairman of the board), Ajax Rubber Co., and A. H. Brown, Meyer & Brown, was enlarged to include P. W. Litchfield, Goodyear Tire & Rubber Co.; and William O'Neil, General Tire & Rubber Co.

Rubber Reclaimers' Division

The annual meeting of the Rubber Reclaimers' Division was held at the Yale Club Monday, January 8, at 10 a. m.

Clark W. Harrison, of the Bloomingdale Rubber Co., and L. J. Plumb, of the United States Rubber Reclaiming Co., were re-elected chairman and vice-chairman, respectively, of the Rubber Reclaimers' Division for 1923. With the chairman and vice-chairman, the following compose the Executive Committee of the division:

G. E. Hall, Boston Woven Hose & Rubber Co.
E. A. Andersen, Rubber Regenerating Co.
J. S. Lowman, Philadelphia Rubber Works Co.
J. S. Clapp, E. H. Clapp Rubber Co.
Joseph F. McLean, Pequanoc Rubber Co.

Hard Rubber Division

The annual meeting of the Hard Rubber Division was held at the Yale Club, Monday, January 8, at 10 a. m.

McConnell Shank, of The B. F. Goodrich Co., was elected chairman of the Hard Rubber Manufacturers' Division for the year 1923, to succeed Harry Weida, of the United States Rubber Co.

Statistics Compiled from Special Questionnaire

INVENTORY OF CRUDE RUBBER IN THE U. S. AND AFLOAT FOR U. S. PORTS ON OCTOBER 31, 1922

	On Hand (Long Tons)		Afloat (Long Tons)	
	Plantation	All Other	Plantation	All Other
American manufacturers (341)	54,574	5,383	12,881	335
Canadian manufacturers (16)	2,282	179	152	36
American importers and dealers (38)	21,341	1,223	29,375	735
Total	78,197	6,785	42,408	1,106

CONSUMPTION OF CRUDE AND RECLAIMED RUBBER

	1919 (Long Tons)		1920 (Long Tons)		1921 (Long Tons)		1922* (Long Tons)	
	Plantation	All Other	Plantation	All Other	Plantation	All Other	Plantation	All Other
Total quantity of crude rubber consumed for all purposes:								
American manufacturers (341)	176,512	18,708	169,797	18,548	152,213	12,122	259,705	15,580
Canadian manufacturers (16)	6,295	788	6,862	1,063	4,335	638	7,605	381
Total	182,807	19,496	176,659	19,611	156,548	12,760	267,310	15,961
Total quantity of reclaimed rubber consumed for all purposes:								
American manufacturers (341)	.....	69,784	.....	70,813	.....	39,973	.....	52,851
Canadian manufacturers (16)	.....	3,751	.....	4,484	.....	1,378	.....	1,607
Total	.....	73,535	.....	75,297	.....	41,351	.....	54,458

* Includes estimated consumption for unexpired period in 1922.

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires, Etc.

	Pneumatic Casings				Inner Tubes				Solid Tires			
Month	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
December, 1921	64	3,696,519	1,839,738	1,980,264	64	4,731,021	2,070,098	2,522,710	10	168,515	40,478	39,520
January, 1922	66	4,174,216	2,055,134	1,596,806	66	5,246,647	2,343,393	1,889,724	11	181,769	40,224	33,294
February, 1922	66	4,691,329	2,084,308	1,562,365	65	6,141,956	2,596,774	1,702,583	11	183,448	39,492	36,805
March, 1922	63	5,183,286	2,645,790	2,073,963	63	6,991,118	3,017,511	2,090,737	11	182,197	49,433	48,350
April, 1922	65	5,464,336	2,401,187	2,086,651	65	7,230,096	2,650,573	2,329,343	11	173,748	46,664	52,309
May, 1922	65	5,523,095	2,721,503	2,639,273	65	7,189,552	2,970,696	2,938,947	11	170,904	57,640	60,711
June, 1922	64	5,042,147	2,838,890	3,133,260	64	6,186,534	3,130,629	3,973,679	11	169,808	66,089	63,408
July, 1922	63	4,834,106	2,476,636	2,695,095	63	5,675,839	3,068,199	3,630,744	11	176,375	71,505	60,425
August, 1922	63	4,629,392	2,905,209	3,029,823	63	5,207,228	3,808,224	4,220,055	11	189,698	84,313	69,435
September, 1922	64	4,612,037	2,504,744	2,502,106	64	5,164,757	3,501,442	3,558,971	11	200,016	82,767	66,797
October, 1922	64	4,682,958	2,674,662	2,588,770	64	5,488,033	3,787,758	3,420,680	11	213,942	85,480	71,275
November, 1922	62	4,964,976	2,733,134	2,379,708	61	6,210,053	3,850,908	3,075,023	11	234,684	85,775	61,466

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse branch, or on a consignment basis, or abroad.

Compiled by The Rubber Association of America, Inc.

The National Automobile Show

Record Car Production in 1922 Surpassed in 1923—Tendency to Closed Cars—Wheel Development

THE Twenty-Third Annual National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, was held in New York, N. Y., January 6 to 13, 1923.

The exhibits fully occupied four floors of the Grand Central Palace and attracted the usual interested throng of automobilists. The automobile has long since ceased to be regarded as a luxury and is everywhere recognized as a necessity of modern life. It is said that there are no less than 11,000,000 in America who are dependent on the automobile industry and those closely affiliated with it.

During 1922 the motor industry surpassed all former vehicle production records, having turned out in that time 2,527,000 cars and trucks. Of this number 2,287,000 were passenger cars. Of the latter number 35 per cent were closed cars, which are gaining in popularity for town use especially in the northern half of the country. The previous record motor car production was 2,205,000 in 1920.

The phenomenal output of cars in 1922 is attributed to two main causes: first, that the manufacturers reduced their prices rapidly and direct to the consumer, offering them at the best values on record; second, that the people have decided to utilize individual transportation.

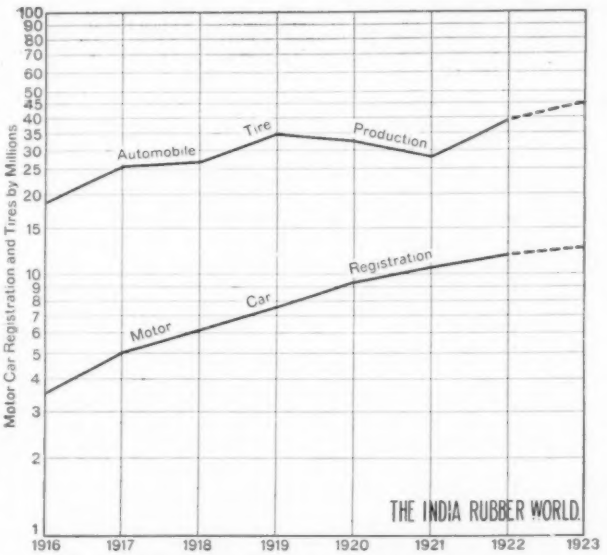
Car Production in 1923

Charles Clifton, president of the National Automobile Chamber of Commerce, summarizes the 1923 outlook for car production as follows:

Among the fundamental currents working for its success are these: (1) Public demand for individual flexible transportation. (2) The time-saving value of the motor car and motor truck, which pays for their expense. (3) The fact that the prosperity of the motor vehicle business is an aid to general prosperity. (4) The definite organization of the national highway program which has resulted in 10,000 miles of new roads being built in 1922. (5) The replacement market for cars and trucks going out of use which should call for about 1,800,000 motor vehicles in the coming year. (6) Growing need for motor transportation in foreign countries. (7) Improved engineering and service stations which make the modern car and truck a constantly reliable means of transportation.

The car production for 1923 may go from 10 to 25 per cent ahead of that for 1922, of 2,500,000 vehicles. On this basis the output will be from 2,750,000 to 3,125,000 or virtually 3,000,000 cars.

Previous records and the above estimate have been utilized in compiling the ratio chart here shown illustrating the relation of the automobile and tire industries.



Ratio Graph of Motor Car Registration and Tire Production, 1916-1922

Accessories

The display of accessories occupied the entire fourth floor and as usual included a great variety of appliances. Of special value to tire users were the well known products of A. Schrader's Son, including the Schrader universal air chuck, which saves air and time in the inflating of tires; the Schrader valve cap and dust cap, the first for securely retaining the air pressure by excluding dust and dirt from the valve parts, and the second for similar effective service. The Schrader tire pressure gage was also shown.

The Shore Instrument & Manufacturing Company exhibited their scleroscope for measuring hardness, also their durometer for ascertaining the hardness and elasticity of cured rubber.

Wheels

It is of interest to note the development in wheel construction from year to year. A laminated wood curved disk wheel has appeared which eliminates the humming noise or telephoning noticeable with steel disk wheels. Two-thirds of the cars exhibited were on wood spoke wheels and the remainder equally divided between the disk and wire wheel.

Supplementary Shows

A large exhibition of Ford and Lincoln passenger cars and Fordson industrial and commercial vehicles was held for two weeks, beginning January 8, at the Ford Motor Company's building, New York City. The important feature of the exhibition was the wide range of equipment displayed which can be utilized with Ford cars and Fordson tractors.

There was also included a comprehensive exhibit by The Firestone Tire & Rubber Co of cotton fiber, tire fabrics, and crude rubber, supplemented by samples showing the progressive stages of tire stock preparation and tire making.

Another supplementary show was that held in Madison Square Garden, New York, N. Y., where many makers of automobiles and accessories displayed their products, being unable to secure space in the Grand Central Palace. Cars of foreign manufacture were among the exhibitors at the garden.

Motor Car Registration and Tire Production

The chart compares on a ratio basis, graphs of motor car registration and tire production in the United States from 1916 to 1922 inclusive, according to the data in the following table:

Year	Motor Car Registration	Tire Production
1916	3,512,996	18,500,000
1917	4,983,340	25,850,000
1918	6,146,617	21,600,000
1919	7,558,848	34,300,000
1920	9,211,295	32,100,000
1921	10,448,632	27,267,000
1922	11,500,000	38,200,000

The drop in tire production for 1921 was due to influences that did not affect the volumes of vehicle registration, the over stock of tires being sufficient to meet the demand.

The graphs are projected in dotted lines to indicate the probable registration and the tire production anticipated by well informed trade sources. The estimated 1923 registration is set at 12,250,000 cars and total tire production may run very close to 45,000,000.

World Export Tire Trade[1]

THE world export trade in tires approximates $95,000,000 annually. The United States secured 31 per cent of the $98,000,000 business in 1919, 38 per cent of the $138,400,000 in 1920, 25 per cent of the $65,400,000 in 1921, and will secure approximately 27.3 per cent of the estimated $74,500,000 total world export trade in rubber tires in 1922.

The following table shows the total tire exports from each of the chief tire manufacturing countries of the world, for the calendar years 1919, 1920, 1921, with the estimated total, based on partial official returns, for 1922. The figures are official export statistics of the various countries, converted into terms of United States currency, at the average annual exchange rates. The French export statistics show only arbitrary official valuations, and not the actual declared values. Exports from Germany in 1921 are estimated on the basis of trade in the last eight months of that year. It should be remarked that the volume of German trade in 1922 is about three-tenths that of France, while the official value is less than one-eighth. The Belgian figures for 1921 and all the Australian statistics cover total manufactures of rubber, but the other figures represent tire exports only.

Exports from the United States to Alaska, Porto Rico, and Hawaii are not included in this table. It is estimated on the average for 1919, 1920 and 1921, that the intertrading between tire manufacturing countries accounts for one-third of the total exports.

TIRE EXPORTS FROM LEADING MANUFACTURING COUNTRIES

Country	1919	1920	1921	[2]Estimate for 1922
United States	$30,482,000	$53,074,000	$16,313,000	$20,350,000
France	29,699,000	37,235,000	26,686,000	34,800,000
United Kingdom	18,844,000	23,712,000	7,946,000	9,200,000
Italy	6,671,000	6,631,000	4,418,000	5,250,000
Canada	5,823,000	9,229,000	2,207,000	4,100,000
Germany	.....	.....	[3] 3,500,000	4,250,000
Japan	3,641,000	4,039,000	2,161,000	2,650,000
Belgium	1,629,000	2,448,000	573,000	1,200,000
Australia	1,278,000	2,064,000	1,587,000	1,000,000
Total	$98,067,000	$138,432,000	$65,391,000	$82,800,000

For certain countries the following table of tire exports by quantity is more indicative of the trend of trade than the value statistics given above. French exports are increasing somewhat in volume, while German, Italian, Japanese and Belgian exports evidence relatively greater advances in 1922. A study of the unit value of exports for these countries in 1921 shows them fairly uniform, while in other years they are widely at variance. The French valuation is the highest among the countries for which unit values are available.

TIRE EXPORTS BY QUANTITY

Country	1919 Metric Tons	1920 Metric Tons	1921 Metric Tons	1922 Metric Tons	1922 Period, Months
France	8,513	14,142	14,028	12,276	10
Italy	2,347	5,336	2,733	816	3
Japan	2,163	2,314	1,322	1,379	9
Belgium	572	1,544	393	706	8
Germany	([4])	([4])	[4] 1,416	3,658	10

[1] Abstract of report in Commerce Reports by E. G. Holt, Acting Chief, Rubber Division, Department of Commerce, Washington, D. C.
[2] Estimate based on figures for last 8 months.
[3] Based on partial official returns.
[4] German statistics available only since May, 1921.

An adjustment of the 1922 figures of value shown in the first table may be made for the purpose of showing more closely the percentages of the 1922 export trade secured by the various countries. The French official statistics of exports, which were valued by an arbitrary valuation in 1922, and the German statistics stated in terms of paper marks, are far out of line when compared on a unit basis with the exports of other countries. Using the declared value per metric ton of French tire exports for 1921 as a basis for computing the value of French exports for 1922, and reducing this figure 25 per cent to allow for lower prices prevailing in 1922, the resulting value of French exports in 1922 would be $23,700,000. Using the same method for the German figures, the resulting value would be $7,050,000. The unit values are then in line with the Belgian and Italian declared export values and (in the case of Germany) the unit value per automobile tire is one-third higher than the average for the United States (solids and casings combined), so it is certain the French exports are still not undervalued.

The resulting estimated total for 1922 and the percentages of various countries in 1922, as compared with 1921, is expressed in the following table.

EXPORT TIRE TRADE IN 1922

Country	Value	1922 Per cent	1921 Per cent
France	$23,700,000	31.8	40.81
United States	20,350,000	27.3	24.95
United Kingdom	9,200,000	12.4	12.15
Germany	7,050,000	9.5	5.35
Italy	5,250,000	7.0	6.76
Canada	4,100,000	5.5	3.37
Japan	2,650,000	3.5	3.30
Belgium	1,200,000	1.6	0.88
Australia	1,000,000	1.4	2.43
	$74,500,000		

The accuracy of this estimate is borne out by the tremendously increased number of tires exported from the United States in 1922, as evidenced by the 25 per cent increase in value of exports with prices reduced as much as 30 per cent on the average.

MOTOR CAR AND TIRE PRODUCTION—1922

There were 36,340,000 automobile tires and 2,527,000 motor cars and trucks produced in the United States during 1922, according to Alfred Reeves, general manager of the National Automobile Chamber of Commerce.

PRODUCTION

Cars and trucks	2,527,000
Cars	2,287,000
Trucks	240,000
Number of new cars needed for replacements in 1923	1,800,000
Tire production	36,340,000

REGISTRATION

Motor vehicles registered in U. S. (approximate)	11,500,000
Motor cars	10,250,000
Motor trucks	1,250,000
Increase in U. S. registration over last year	7%
World registration of motor vehicles	12,750,000
Per cent of world registration owned by U. S. A.	81%
Per cent of rubber supply used by automobile industry	83%

"PNEUMATIC TIRES," BY HENRY C. PEARSON, IS NOW READY for distribution. This authoritative, comprehensive work fills a long felt want in the tire industry. It is written for tire manufacturers, dealers and repairmen.

Top Sizing Paper with Rubber Latex and Casein

New American Process—Beater and Top Sizing Methods—Experiments with Kraft Paper

THE utilization of rubber latex for manufacturing purposes is rapidly gaining importance as the results are disclosed from time to time by the investigators. It is evident that a new chapter in the technology of rubber will be written when the outcome of the present study of latex and its direct application in industry is known. The practical effect will be the extension of and interlocking of the rubber and other industries in new and important relations.

Many applications of rubber latex will doubtless be made, the first of which to appear relates to the improvement of paper as regards strength, followed by rubberizing textile fabrics, woven and in process.

Suggestions of what may be expected in the future by the use of rubber latex in rubber, textile, papermaking and other lines, as new processes and applications are developed, may be gained from the following results obtained by experiments in this field.

Latex and Paper

Applying rubber latex in papermaking has been done in two ways: First by the beater method as the fiber is being hydrated. This is the method patented by Frederick Kaye. The second is by an entirely new method of top sizing on which applications for patents have been made. The Kaye method and results are the more widely known as several articles by the patentee have appeared on the subject. For the convenience of the reader, however, the following notes on the beater method are quoted in part from a recent lecture by Mr. Kaye[1].

Beater Method

Rubber latex while exceedingly rich in rubber is a perfectly limpid liquid and is miscible with water in all proportions, and the essential condition for addition to the beater pulp is that the latex must be exceedingly well diluted—to have a rubber content of one per cent or even less. For if the latex is added straight away or with only partial dilution some of the rubber may be thrown out onto the fiber in small particles and the paper is in danger of being spotted.

Generally, the well-diluted latex should be added when the beating of the fiber is completed or almost completed. It is a matter for experiment to find at what stage for a given fiber and for a given quality of paper it is best to add the latex. As rubber latex appears to increase the hydration or rate of hydration of fibers and as pulp containing latex works rather "wetter," it seems that for many papers the time of beating can be reduced.

The strength of paper depends upon the nature of the fiber composing it and the time and character of the beating to which they have been subjected, and as small proportions of rubber latex can materially add to the strength of a paper, it follows that in these cases this added strength is likely due to the physical effect of the rubber latex upon the papermaking qualities of the fibers—that is, their condition of hydration when the paper is made—rather than to the strength given to the paper by the rubber.

If rosin and alum are already in the beater, the diluted latex should be added slowly, being passed through a fine sieve. A little more alum should be added afterward in order to completely precipitate the latex onto the pulp.

Ordinarily, however, best results have been obtained by adding rosin and alum after the addition of the latex. It is always important to have the final condition of the fiber faintly acid so the rubber will be coagulated and be entirely taken up by the fiber.

[1] Bulletin of the Rubber Growers' Association, Vol. 4, No. 9, September, 1922, 408-418.

Experiments with partially beaten fiber made into hand sheets with and without latex show that the physical qualities of the latex paper, especially the bursting strain and the folding number, were much above those of paper made under exactly comparable conditions without latex.

The amount of latex necessary to get the optimum results varies with the quality of the fiber. The addition of amounts varying from .2 to 1 per cent (dry rubber) have shown good results. For example, a 1,000-pound beater would require approximately ⅔ of a gallon to 3⅓ gallons, respectively, of rubber latex containing 35 per cent dry rubber, in order to obtain the above percentages. The 3⅓ gallons of latex should be well strained and then diluted with approximately 100 gallons of water before being added to the beater.

American Experiments

In the hands of experimenters among American paper manufacturers the results obtained with latex by the beater method have not met with the results expected. The uncertainties and difficulties inherent in this method made it evident to certain American rubber men and their chemists that search should be made for a simpler and surer method of securing to the paper industry the marked increase in strength and durability to be gained by the combination of rubber with paper. The result is a simple process of top sizing with latex, containing a minimum of 30 per cent pure rubber, which apparently meets all practical requirements for increasing the strength, folding number and water resistance of a finished paper.

Top Sizing Method

The process is simple, consisting of immersing the paper in a top sizing mixture of latex and casein, then running it between rolls to squeeze out the excess liquid and to insure an even distribution on the surface. The paper is then dried on moderately heated rolls. The latex-casein mixture consists of 75 per cent latex and 25 per cent water-soluble casein, calculated on a basis of dry rubber and casein, diluted with an equal volume of water.

The paper, after dipping and drying or partial drying, may be subjected to a dilute formaldehyde bath, which tends to increase the water resistance. Paper sized in this manner shows an appreciable improvement in texture and feel, as well as an increase in strength. The process is applicable in making paper for wrapping, insulating, oil, and water-resistant purposes.

Kraft Paper Experiments

The purpose of these tests was to increase the strength, folding index, and water resistance of kraft paper.

In the submitted samples marked A-O, B-O, C-O, etc., are the untreated papers (controls). A-1, A-2, B-1, B-2, B-3, etc., are the same papers which have been treated with various dilutions of a latex-casein mixture.

In nearly every case the bursting and tearing strengths have been considerably increased. For instance, A-O is an untreated 45-pound kraft paper with a bursting strength of 45, a tearing strength with the grain of 10 and against the grain 10½. A-1 is the same paper with a coating of the latex-casein mixture, and the bursting strength has been increased to 77½, and the tearing strength to 13 and 35, respectively.

The per cent added weight as given in one column indicates roughly the amount of dry rubber and casein retained by the paper after treatment.

Table I

KRAFT PAPER EXPERIMENTS

Mixture Used: 75% Latex, 25% Casein

No.	Material	Proportions of latex to water	Approximate Per cent added weight	Bursting Test	Tearing Test: With the grain	Tearing Test: Against the grain
A-O	45 lb. sized kraft	untreated	0	45	10	10½
A-1	45 lb. sized kraft	2:1 water	10	77½	13	35½
A-2	45 lb. sized kraft	1:1 water with formaldehyde	5	72½	14½	25
B-O	80 lbs. unsized kraft	untreated	0	119	35	90
B-1	80 lbs. unsized kraft	2:1 water	2	150	40	91
B-2	80 lbs. unsized kraft	1:1 water (afterwards dipped in formaldehyde)	3	145	39	80
C-O	60 lbs. unsized kraft	untreated	0	87	16	43
C-1	60 lbs. unsized kraft	2:1 water	10	97½	25	57½
C-2	60 lbs. unsized kraft	1:1 water	6	112	19	51
D-O	Rope paper unsized	untreated	0	132	38½	80
D-1	Rope paper unsized	1:1 water	1	185	49	104
E-O	Lot 1732 unsized	untreated	0	168	32	103½
E-1	Lot 1732 unsized	1:1 water	2	204	36	97
E-2	Lot 1732 unsized	1:1 water (afterwards dipped in formaldehyde)	4	181½	36½	108
E-3	Lot 1732 unsized	1:1 water with formaldehyde	5	183	34	115
F-O	Lot 1730 18 unsized	untreated	0	171	45	100
F-1	Lot 1730 18 unsized	1:1 water	4	{ 178 } { 224 }	48	100
F-2	Lot 1730 18 unsized	1:1 water (afterwards dipped in formaldehyde)	6	188½	37	87½
G-O		untreated	0	173¾	45½	117½
G-1		1:1 water with formaldehyde	5	203	40	115

It is calculated that 5 per cent added weight will cost 1.9 cents extra per pound of paper. Some samples show an appreciable increase in strength with only 2 per cent added weight which would cost approximately 4/5-cent extra per pound of paper.

In Table II the samples 1 to 6 show bursting tests on single and double plies of the same kraft paper with 75:25 latex-casein mixture under different drying conditions. Samples 7 to 18 show treatment, air drying and bursting tests of the same paper sized with mixtures in which the percentages of casein varied from 30 to 10 per cent.

Table II

KRAFT PAPER EXPERIMENTS

Mixture Used: 75 Per Cent Latex, 25 Per Cent Casein

Sample No.	Method of Drying	Bursting strength
0	Blank, the untreated paper	68
1	Sun and heat dried	87
2	Heat and ordinary light	84
3	Air dried in dark	74
4	Air dried in dark and then heated	98
5	Double (inside only) and heat	181
6	Double (both inside and out) and heat	183½

	Per cent casein	Air dried		
7	30	1:2 water		82
8	30	1:1 water		58
9	30	2:1 water		79
10	30	undiluted		78
11	20	undiluted		74
12	20	2:1 water		82
13	20	1:1 water		82
14	20	1:2 water		77½
15	10	1:2 water		65
16	10	1:1 water		69
17	10	2:1 water		71
18	10	undiluted	slightly tacky	79

The information contained in this article was courteously supplied by F. R. Henderson & Co., Inc., 111 Broadway, New York, N. Y., to whom much credit is due for this valuable research work.

SLAG WOOL AS A SUBSTITUTE FOR ASBESTOS

Among the various non-conducting and fire-resisting materials which have been put forward as a substitute for asbestos, the most successful has been slag wool. This substance, having been discovered in volcanic regions, has been artificially and successfully produced from slag, thus utilizing some of this refuse which accumulates in large heaps near blast furnaces.

The process of manufacture consists in blowing a jet of steam or compressed air across a small stream of molten slag as it leaves the blast furnace. The steam jet divides the stream of slag into a spray, and long filaments, each attached to a particle of the slag, are formed. These fibers, when collected and massed together, somewhat resemble raw cotton, and usually weigh about 20 pounds to the cubic foot. Finer material, which brings a higher price, will weigh only about 10 or 12 pounds to the cubic foot.

Slag wool, as thus manufactured, is a serious rival to asbestos. It is not only a cheaper substance, but, according to some manufacturers, it is even a better non-conductor than asbestos. It also forms a good filling material, when the object is to prevent the transmission of sound in buildings. In one respect, however, slag wool is much inferior to asbestos, as the fibers of the first-mentioned substance are very brittle, while its great capacity for absorption of water, useful though this may be in case of fires, is a great disadvantage when it is to be used as a boiler or pipe covering.

The great brittleness of slag wool has its advantages and disadvantages, while the material has a harsh, gritty feel, quite unlike the soft silkiness of asbestos. Under the microscope the brittle glassy filaments of the slag wool are seen to be exceedingly fine, but they lack the hollow jointed structure of organic fibers. Slag wool can never be a real competitor of asbestos, due to the presence of sulphur in the former material, which, with water, forms sulphuric acid.—*The India-Rubber Journal.*

COTTON PRICES REACH NEW LEVELS

According to E. Walter Mockler in the *New York Commercial,* the statistical position of raw cotton is better than it has been for several years. The reasons are that the supply is limited, future output is threatened, and consumption is heavy and will be heavier as long as supplies hold out. The ravages of the boll weevil are the main cause of this small supply with attendant prices, the statement being made that last year's crop amounted to less than 10,000,000 bales, whereas normal consumption runs at the rate of 12,000,000 bales per annum. It should be noted also that the carryover is very small.

In this state of affairs the South is beginning to recuperate, as a fair price was received for the 1921-22 crop, while cotton sold since November has brought the seller's price in practically every case. A firm banking position is at present being built up in the South, sufficient to back up any holding movement, a situation which could be met with little difficulty. According to Mr. Mockler, there are large supplies of money all over the country, particularly in New York City, and with this abundance of funds it will not be hard for southern banks to secure plenty of accommodations to allow them to carry their cotton customers indefinitely.

Hobbing Process of Mold Making

A Process New to the Rubber Worker for Producing Multi-Cavity Molds Accurate in Duplication

IN THE rubber industry, molds for producing goods are made of soft metal, cast iron, or steel and the mold cavities are made and duplicated by casting from a model or by a process of machining, and finishing by hand polishing. Molds of these types have been employed in rubber making practically from the discovery of vulcanization. They serve very well, notwithstanding their frequent lack of accuracy, or faulty registration, particularly when used for molding in moderate quantities large objects or small pieces.

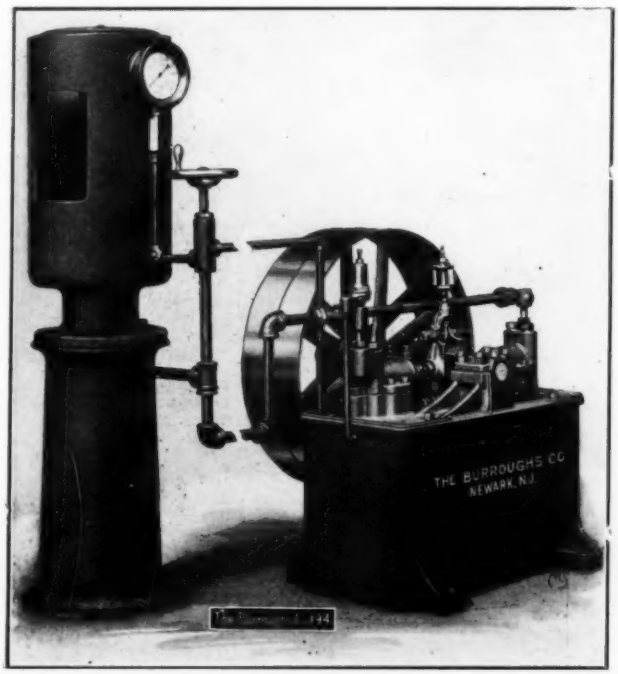


Fig. 1. Power Hobbing Press

Such molds have limitations which render them unsuited for volume production of goods requiring accurate dimension and lustrous finish, such as hard rubber for radio parts and other hard plastic forms. This is due to the difficulty of securing accuracy in duplication of the mold cavities or dies by machining and also to the excessive cost of making such duplicates.

Molded rubber goods generally are produced in great variety of form rather than in great individual volume, except in such instances as rubber heels, balls, air-brake washers, etc. Also, extreme accuracy of dimensions is not the rule nor is lustrous finish required on molded rubber, except in the case of hard rubber, where finish is obtained by polishing or buffing the piece.

New Rubber Goods Field

The demand for hard molded parts for radio work offers a new field for the rubber manufacturer, in which if he undertakes to supply the goods called for he must compete with molders of hard plastic materials. He will thus be obliged to revolutionize his settled practice in mold making to meet the new conditions, because old rubber mold making and mold operating methods are inadequate and by them he cannot produce goods competing in accuracy or cost with those of the hard plastic molder.

Obviously, the rubber industry in molded goods production is seriously hampered by antiquated practice when it comes to the radio and like situations.

Advanced Method of Mold Making

The attention of rubber manufacturers is directed to a method of mold making that meets the most exacting requirements as to accuracy of cavity duplication and perfection of finish. The method is known as the hobbing process, and, while essentially new to the rubber worker, it has long been perfected and used in silversmithing, minting coins, striking medals, and in the production of hard plastic molded goods in endless variety.

Hobbing, or the process of forming duplicating dies or cavities in metal by means of a hardened steel hob, or punch, is accomplished in a high-powered hydraulic press.

Power Hobbing Press

A press designed particularly for the heavy pressures required in hobbing steel dies is that illustrated in Fig. 1. This is a rodless press, in which the portion above the ram is a single-piece casting with an opening, for operating the tools on the work, cored through the top casting, which gives a very rugged construction. In the upper part of the opening is seen a heavy hardened steel anvil corresponding to a similar one, not shown, which is attached to the top of the ram of the press. These anvils must be sufficiently hard to resist impression of the hobbing tool and the piece being hobbed. Presses of the type illustrated are made

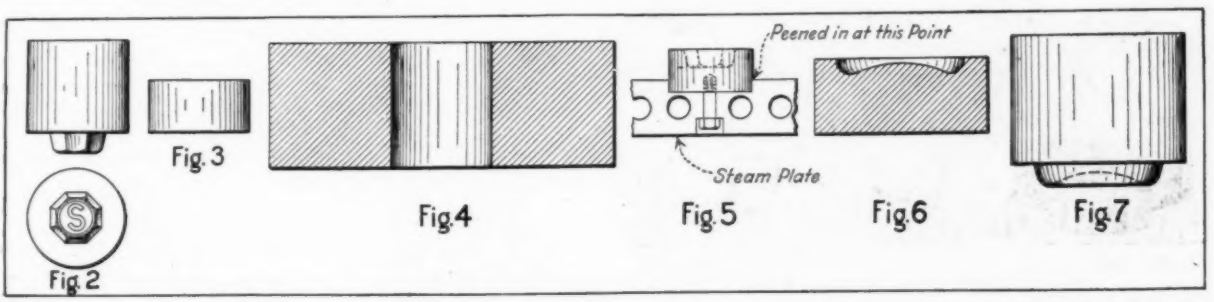


Fig. 2. Plan and Elevation of a Hob. Fig. 3. Machinery Steel Blank. Fig. 4. Hobbing Chase. Fig. 5. Hobbed Die Mounted on Press. Fig. 6. Hobbed Die for Ear Piece Fig. 7. Hob for Ear Piece

in powers of 150 to 5,000 tons' capacity and are operated by a belt-driven pump.

As a matter of fact, any type of hydraulic press fitted with hardened steel anvils and having sufficient power can be used for hobbing. The pressure required for this work commonly ranges between 50 and 200 tons per square inch.

Making and Using Hobs

To illustrate the construction and use of a hob a simple instance will suffice. Fig. 2 represents in plan and elevation a hob for an octagonal tapered piece with a letter engraved upon its face. The hob is a duplicate in steel of the object to be formed in the die or cavity hobbed. The hob is made of tool steel accurate to dimensions, highly finished, and hardened. Machinery steel is selected for the blank (Fig. 3) in which the die is to be formed, because it has greater ductility than tool steel. It has the same diameter as the hob and both are a slip fit for the enclosing chase ring (Fig. 4), which is case hardened to resist the pressure upon the hob and the blank. The chase is always made of ample size to support the great strain exerted by the hob and to guide it in action.

The hobbing operation is slow, as the metal of the die flows slowly and condenses and hardens under the hob, necessitating removal of the blank for annealing as the hobbing progresses. The alternate operations of hobbing and annealing are performed on groups of dies, reducing the resultant cost per die to a minimum.

Hobbing Deep Dies

Only shallow dies can be hobbed from a flat surface. In deep dies a preliminary cavity of approximate final size is first machined and then hobbed to effect knurling, engraving, sizing and finish.

In general, hobbing applies to dies for pieces that cannot be turned out on a lathe. There are some exceptions to this statement, as exemplified in Figs. 6 and 7, which represent respectively the die and the hob for a portion of the ear cap of a telephone receiver.

Luster by Hobbing

The luster of the hob is imparted to the die and is produced to greater perfection and in far less time than would be required for hand polishing the dies. The luster of the dies derived from hobbing is much more lasting than that secured by polishing, because the metal of the die is condensed by the hobbing pressure,

The Burroughs Co.

Fig. 8. Articles from Hobbed Molds

while in ordinary polishing no condensation of the metal takes place.

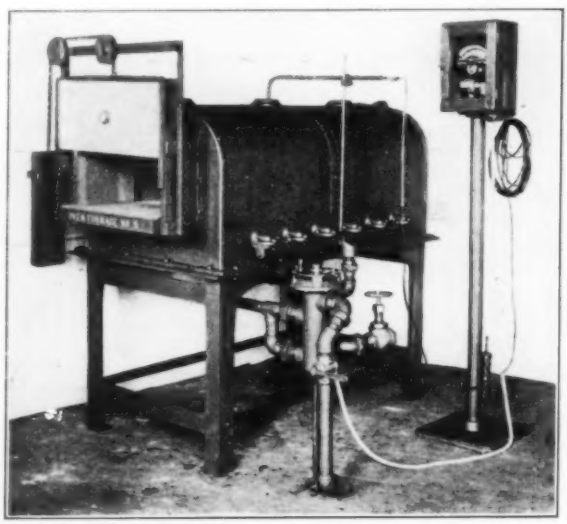
The hob itself will lose luster, due to constant use, and requires occasional repolishing to remove the frosted effect caused by adhesion of the metal of the soft steel die. In exceptional cases it may even be necessary to wipe the hob with crocus cloth after every application.

Objects Made in Hobbed Dies

A group of hard plastic molded objects, all of which were molded in dies produced by hobbing, is shown in Fig. 8.

Heat Treatment of Hobs and Dies

A gas heated oven furnace arranged as in Fig. 9, with automatic heat controller, is used for hardening and annealing the dies. The hardening is done by the packing method which briefly is as follows. In the bottom of a suitable iron box is placed a layer of charred bone or any one of the many different good carbonizing compounds available. This layer of material should be about one inch in depth. The die or mold is placed on this layer face downward and pressed into it to insure that the die cavities are entirely filled with the material. A further layer of carbonizing material should then be added in quantity sufficient to completely fill in around the sides of the dies to the height of any of their working surfaces. Above this should be a layer of sand or some



American Gas Furnace Co.

Fig. 9. Gas Fired Oven

other neutral material and finally a cover is placed on the box and luted with fire-clay in order to retain the liberated carbonizing gases which are to be absorbed by the working parts of the dies.

A test piece is usually inserted in the case hardening box pan, which is removable without disturbing the dies, to serve as a guide to the progress of the hardening process.

The box packed as described is placed in the oven furnace, brought to a carbonizing temperature, and allowed to remain there for two or three hours, depending upon the depth of the case hardening required. If the test price shows the desired depth of hardening, the dies are withdrawn from the packing and quenched.

It is necessary to draw the temper on certain dies after hardening, depending upon the work which the finished die is to do, also upon the shape of the dies.

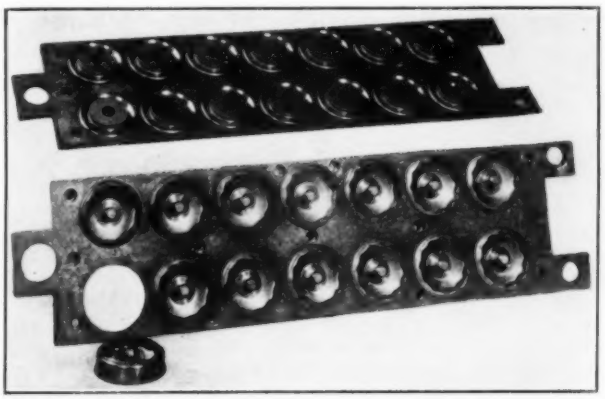
Drawing the temper is done by various methods. Where the temper is to be drawn at not over 600 degrees F. it is done in an oil tempering furnace. When the temper is drawn at temperatures above 600 degrees F. a lead hardening or an air tempering furnace is used.

Expense and Durability of Hobs

It is practically impossible to produce by machining methods duplicate dies like the set for molding automobile radiator caps

illustrated in Fig. 10, because of the prohibitive cost of the labor required.

If one die only is required, the cost of making a hob to produce it would be unwarranted, but hobs are indispensable where



The Burroughs Co.

Fig. 10. Hobbed Dies for Radiator Cap

duplicate dies are needed. In such cases the hob cost per die becomes relatively low compared to the machine cost per die.

The durability of a good hob is great, in fact, practically unlimited, if used and cared for properly. Hobbed dies can be made up to about ten inches in diameter, although usually they are much smaller, as indicated in Fig. 8, which is typical. The cost of hobs for such objects runs from about $25 to $100, depending on the size, design and engraving of the piece.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(132) A subscriber desires addresses of manufacturers handling the color pigments used in connection with the toy balloon trade.

(133) Request is made for a list of color manufacturers in the East who supply colors suitable for dipped rubber products.

(134) Inquiry is made for addresses of brokers who supply crude rubber.

(135) Addresses are wanted of manufacturers who can turn out sheet rubber, five to ten point gage.

(136) A reader desires addresses of manufacturers of bead trimmers.

(137) Request is made for addresses of manufacturers of dies.

(138) A reader wishes to get in touch with dealers in raincoat cloth, etc.

(139) Information is requested as to where supplies of rubberized cloth and rubberized silk may be obtained.

(140) Addresses are desired of concerns manufacturing rubber handles such as are used on bicycle or motorcycle handle bars.

(141) Inquiry is made for addresses of manufacturers of rubberized silk of gossamer weight for raincoats.

(142) A reader desires to get in touch with American firms requiring a representative in Ireland for sale of American motor tires, tubes, etc.

(143) Addresses are desired of manufacturers of tire rimming presses and machines for placing bead rings.

(144) A reader asks for a list of manufacturers of tire spreaders.

(145) A subscriber asks for names of manufacturers of narrow high tension rubber tape used in winding golf ball centers.

(146) Request is made for addresses of manufacturers of two-inch elastic.

(147) Information is requested concerning manufacturers of rubber type.

(148) We are asked for the name of a good broker in New York, from whom supplies of balata may be obtained.

(149) A reader desires to know where he can purchase 50 to 100 gallons of latex to experiment on dipped goods.

(150) Information is desired as to where some new or second hand steam jacket 30 by 3½ molds may be purchased.

Foreign Trade Opportunities

Addresses and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Requests for each address should be on a separate sheet and state number.

(4673) Rubber tires of the clincher type—Egypt. Quote c. i. f. Alexandria. Cash against documents.

(4689) Auto tires—Austria. Agency. Quote f. o. b. New York.

(4691) Asbestos brake linings, gaskets, etc.—Norway. Purchase and agency.

(4694) Auto tires and accessories—Belgium. Quote c. i. f. Antwerp.

(4721) Rubber soles and heels—Italy. Purchase and agency. Quote c. i. f. Genoa.

(4723) Well-known brand auto tires—Spain. Agency. Quote in Spanish or French, c. i. f. Spanish port.

(4753) Dental, surgical, and medical supplies, including rubber goods, sanitary goods, etc.—India. Purchase and agency.

(4759) Reinforced rubber shoes—Italy. Purchase. Quote f. o. b. New York.

(4772) Cord and fabric tires, nickel horns with rubber bulbs—Uruguay. Agency. Quote in Spanish c. i. f. Uruguayan port.

(4833) Friction and rubber insulating tapes—Switzerland. Purchase. Quote in French c. i. f. Havre and Antwerp.

(4843) Ebonite—Switzerland. Purchase. Cash against documents. Quote in French c. i. f. Havre and Antwerp.

(4850) Druggists' rubber sundries—Cuba. Purchase.

(4864) Rubber specialties—Canada. Agency.

(4865) Auto tires and accessories; motor cycles—Hungary. Agency. Quote c. i. f. European port.

(4890) Women's sanitary aprons, white and tan—Canada. Purchase. Agency. Quote f. o. b. shipping point.

(4917) Tires, fountain pens, and novelties—Czechoslovakia. Agency. Cash.

(4988) Vulcanizing equipment for rubber soles; capacity 1,500 to 2,000 pairs per hour—Spain. Purchase. Quote f. o. b. New York.

(5014) Tennis supplies, including balls, shoes, etc. Other sporting goods—South Africa. Purchase and agency. Quote c. i. f. Cape Colony port. Cash against documents.

(5025) Auto tires; clincher and straight side; mostly cord—Chile. Purchase or agency. Quote c. i. f. Chilean port.

(5038) Men's apparel, including waterproof raincoats—Netherlands. Agency. Quote c. i. f. Rotterdam or Amsterdam.

(5042) Hospital supplies, including rubber tubing—India. Agency. Quote c. i. f. Indian port.

(5044) Small vulcanizing outfits and auto accessories—Italy. Purchase or agency. Cash against documents. Correspondence Italian.

Trade Lists Available

Mimeographed copies available on reference to titles and file numbers.

Rubber goods, importers and dealers, Sweden, EUR-12035.

Rubber goods, importers and dealers, Netherlands—EUR-8010.

Rubber goods, importers and dealers, South Africa—BE-6037.

Rubber Pavement the World Over—II[1]

Experiments and Cost Estimates—Recent Patents—What Has Been Learned—Rubber Sidewalks—American, French and German Efforts—Rubber Paving in the Far East and Elsewhere

E. F. SPERRELL, surveyor of Holborn Borough, London, recently announced that the Borough Council was going to make an experiment in rubber paving that would be different from and, it was believed, more successful than that attempted in Southwark. Mr. Spurrell stated that he would use concrete blocks shaped like wood blocks and would affix ¼-inch rubber pads directly to them. Six months' test will be given on a section of Upper St. Martin's Lane. The cost is estimated at 70*s.* a square yard, as compared with 40*s.* for wood blocks, but, while wood would last twelve or fourteen years, rubber should last twenty-five years or more, the surveyor says.

When enthusiasm for rubber paving was at its height in London, in 1913, the opinion of Dr. Philip Schidrowitz, the well-known rubber chemist, on the cost and practicability of rubber pavements was sought by the Society of Chemical Engineers. After a study of all available data, and basing his calculations on crude rubber at 48 cents a pound, and with a composition one-third rubber, he figured that a ton of the paving material would cost $484, as compared with $9.68 to $14.52 for asphalt; or cement, concrete or stone ranging from $9.68 to $24.20. Even conceding marked durability and other merits, he feared that rubber paving, as then proposed, was "not available."

To enhance interest in rubber and to demonstrate its value for driveways, the Government of the Federated Malay States got the consent of the London authorities in 1915 to lay a rubber-tiled pavement in front of the F. M. S. Information Office, 88 Cannon street, and good reports are made of its wearing quality. The tiles are 12 inches square, ½-inch thick, and cemented to the concrete foundation.

H. Hawthorn and H. A. Huntley, both of London, are confident that the anchoring device patented by them in England recently, will overcome the trouble experienced in fastening rubber slabs or sheets to concrete. A sheet of rubber, smooth on its wearing surface and either smooth, recessed, or channeled on its under side, has embedded on the under side a series of cone-shaped rings with small holes in their sides. After the usual concrete foundation is laid, a top layer is put on of finely sieved matrix and aggregate, and while this layer is still plastic the rubber sheet is pressed into it and the semi-liquid material is forced into the recesses of the rubber sheet, into the cone rings, and through the tiny ring holes. When the plastic dries, it is said to grip the sheet very firmly, and lifting and creeping are said to be improbable.

The India Rubber Journal

Laying Rubber Pavement in Borough High Street, Southwark, England

Wingate-Sutton Block

Two types of this block have been produced, a number one block made of the "core" surfaced with half-inch hard vulcanized rubber, and a number two block, which consists of the "core" only. The principal ingredients of the core, which has been patented, are rubber, jute and china clay. These ingredients enable the whole block to be vulcanized in one piece, and it has been found by experiment that the block should be a solid mass, and not made up of separate superimposed portions. Where the block has been hollowed out and filled with concrete or wood to reduce cost, it has been found that the rubber surface "creeps" and shows wear on the underside at the place of contact and not on the surface. The separate solid block gives the best results. The block proposed is similar to the wooden block used ordinarily for street paving, and measures 9 inches by 4½ inches by 3 inches.

Up to the present time it has not been possible to manufacture rubber blocks at under three times the cost of wood paving, which

[1]Continued from THE INDIA RUBBER WORLD, January 1, 1923, pages 205-206.

is about 25*s.* ($5.40) per square yard. The Gould block core, it is claimed, can be made at 2*d.* per pound and it is hoped that the price of paving will not be more than £3 ($13.35 at $4.45) per superficial square yard.

Two patents on rubber-concrete paving blocks were granted in Great Britain July 19, 1922, to J. H. deW. Waller, of Dublin, Ireland.

North British Block

According to this invention, the blocks or slabs of rubber are provided with rigid metal projections, extending downwardly through the lower rubber face of the block or slab, the rigid metal projections being sunk into the road bed or foundation. If desired, the base also, or surface of the block, may be grooved, fluted, or otherwise designed to afford a firmer foothold or attachment to the foundation.

The block consists of a hard rubber base and a soft rubber face. It may, however, consist of a plurality of rubber layers varying in hardness from a hard base to a soft face. The block is anchored to the road bed or foundations by metal dowels or rigid metal projections, which may have enlarged lower extremities. The dowels may be carried by one or more metal or other plates embedded in the hard base or embedded in one of the harder layers of the block, or interposed between two of the harder layers of the block.

What Has Been Learned

From the various tests made to date, British road builders have learned that foundations do not have to be nearly as strong for rubber as for blocks, the reason being that the vibration of heavy traffic on the latter causes disintegration of the concrete even when it exceeds the 12-inch standard.

If rubber blocks cost more, foundations may be made thinner; and even if the rubber pavement costs more, its life is much longer, even without taking into account the advantages of quiet and safety. The most exacting tests dispelled the fear that rubber pavements would prove "skiddy." Accident insurance companies were at first so prejudiced against rubber paving that they imposed prohibitive rates on vehicles passing over it. Finally they dropped the rates, and then disregarded the hazard altogether. It was found that even when the rubber pavement was oily or graphited there was no noticeable slip to vehicle wheels.

Experimenters are quite agreed that the economical laying or spreading of rubber in liquid or semi-plastic state, as done in putting down various kinds of bituminous pavement, is the goal that is really worth striving for; and this they say without prejudice toward rubber block pavement. Yet some fear that even were it possible to lay rubber in such continuous-sheet fashion, the traction exerted by heavy rubber-tired trucks and omnibuses would soon draw it loose from its base, no matter what cement or other means of attachment to a base were used. Such a strain, it is estimated, may ordinarily average as much as 250 pounds to the square yard of roadway.

However, "hope springs eternal" in the rubber paver's breast. Some of the more imaginative experimenters never tire of hoping to hit upon a compound that will be low-priced, easily "sheeted," and durable. It may be largely of reclaimed tire rubber and various cheap fillers and toughenners treated with a "2-gas vulcanizing solution," and which even may be poured and broomed upon a concrete foundation into the upper side of which steel shavings or similar "gripping" material are half embedded. Such a road coating, they hope, will rival the toughest tire tread.

One means for attaching rubber caps to metal-topped wood or concrete blocks apparently remains to be tried, and that is the method used by the makers of clothes-wringers for coating iron rolls with vulcanized rubber. A hot iron or steel bar is thrust into a tube or hollow cylinder of rubber and the heat in melting the rubber fuses it to the metal so that separation is quite out of the question. Similarly, a method may be devised for impressing small slabs of rubber on hot metal plates which may be clamped upon wood blocks, or by means of lugs attached to concrete blocks while the latter are being molded; or they may be attached to a top coating of cement while the latter is plastic.

When the Rubber Growers' Association, Inc., of Great Britain, in 1920, offered over $25,000 in prizes for ideas or suggestions for new or more extensive uses of rubber, the hope was expressed that many strikingly valuable propositions would be forthcoming. A thousand competitors, for instance, urged rubber flooring, paving, or roadways, but the judges reported that not one gave a really useful method, especially for road covering, ignorance of the physical properties of rubber and of manufacturing methods being very evident.

Rubber Sidewalks Successful

Since in city roadway traffic the horse and the metal-tired-wheel vehicle are becoming negligible factors, many claim that to a corresponding degree the need of rubber-surfaced driveways is less urgent; but they do believe that there is a real need of rubber sidewalks; and they believe that if their practicability can be demonstrated, they will soon be followed with rubber-covered roadways.

As Great Britain pioneered in rubber pavement for roadways, so it also led the way in rubber sidewalk building. Some of the walks laid have proved to be remarkably efficient. An early conspicuous example was the sidewalk laid in 1883 by the North British Rubber Co., Limited, in front of its Princess street warehouse in Edinburgh. Twenty-five years afterward it was found to be practically as good as when first laid, although meanwhile millions of feet had trod upon it and it had to endure blistering sun, rains and frosts. Withal no complaints had been made by pedestrians that it did not afford a good foothold.

A combination variety of rubber and concrete adapted to sidewalk and, possibly, to paving construction, was brought out in 1921 by Messrs. Brooks Bros., Halifax, England. A sample was placed at the entrance to the salesroom of Messrs. Lewis & Peat, Ltd., rubber brokers, 6 Mincing Lane, London. It consists of finely-compressed concrete into which studs of rubber wired together in regular formation are embedded. Durability and non-slip qualities appear to be especial advantages.

American Rubber Paving Efforts

Rubber paving has not made the same appeal to Americans that it has to the British. Reasons for this may be found in the almost universal use of rubber-tired vehicles, the extensive construction of asphaltic roads, and the obviously greater cost of rubber as a paving material. In this regard Americans appear to be content with letting other countries do the experimenting. Nevertheless, some rubber paving research has been made in this country and some rubber paving material has been made, notably by the Standard Asphalt & Rubber Co., of Chicago, which in 1912 made paving bricks 8 by 4 by 2½ inches, with hollow-grooved sides. The wearing surface had 25 per cent of rubber and 50 per cent of "M. R. X.," a mineral rubber. The base for the bricks was "Sarco," an asphaltic compound; and when laid the bricks were grouted with melted "Sarco." In the tests relays of sharp-shod horses were kept going over the sample pavement for a long period, without apparently damaging the bricks.

In referring to British experiments with rubber-capped blocks, a leading American rubber man remarked that this country was ready to accept and manufacture anything of value in the rubber paving line that proved available; but he thought that what was likely to be serviceable in London might not be so here, owing to different traffic and climatic conditions. It has been suggested in American engineering journals that scrap rubber might be used to advantage in forming the sub-grade of macadam or concrete roads; but practical application of the idea remains to be made.

The production of a tough, non-slip, resilient composition for paving blocks or slabs was indicated in a process patented in the United States in 1905 by James P. Crane, of Chicago, for combining steel wool with a rubber compound.

French Rubber Paving Tests

Some extensive tests with rubber paving that are said to have been quite satisfactory were made between 1902 and 1908 in Paris, Lyons, Marseilles, and some other cities in France. The material used consisted of powdered asphalt added to rubber softened with a solvent and mixed with carbonate of lime. The composition was laid cold and in a thinner layer than ordinary asphalt, the base being about 6 to 8 inches of concrete.

Evidencing renewed interest in the use of rubber as a paving material, the French Patent Office reports that Ch. de Chandenberg in 1917 was granted a patent for a road-covering preparation consisting of rubber, asphalt and bitumen.

German Rubber Paving Work

Early in 1887 some 10,764 square feet of a paving material, largely of rubber, the invention of a Hanover engineer named Busse, was laid on the driveway over the Goethe Bridge, at Hanover, Germany. Among other advantages noted was a marked reduction in vibration formerly caused by the vehicle traffic on the span. So pleased were the city authorities with the paving material that in 1888 they laid 16,146 square feet of it on one of the main streets.

In 1889 the Berlin corporation also decided to give the Busse paving a trial, laying a long stretch of it near the Lutzow bank. Hamburg also tried it, and apparently it gave much satisfaction. A German paper gave the composition as "15 per cent rubber mixed in special treatment with 85 per cent ground stone. It is entirely even when laid on concrete, looks like asphalt, although not as smooth, and is dustless and noiseless."

Rubber Paving in the Far East

Some of the most promising experiments in rubber paving are being made close to the source of rubber production in the Far East. In Chilaw, Ceylon, rubber blocks laid many months ago have withstood heat, rain and traffic so well that the Ceylon Department of Public Works intends to try them soon on streets in Colombo.

It is in Colombo that an especially interesting test is being made of the use of a rubber solution for a road dressing. The solution is the invention of a Ceylon rubber planter, and for nearly two years it has been used with much satisfaction in surfacing roads on the Deviturai Rubber Estate. A short stretch has also been laid in Galle. The exact nature of the composition is not stated, but it is said to consist largely of pure bark and scrap rubber and must be heated before being spread like tar or asphalt on the dry surface of a road, with brooms. Fine river sand and gravel are next sprinkled over it, and, after being well pressed and leveled with a steam roller, it may be used within three hours. The inventor hopes soon to have a rubber solution that will afford not merely a binder or dressing for other material, but that which all rubber-paving enthusiasts have long desired—a heavy liquid composition that will form a practically endless spread of material 1 or 1½ inches thick on any road with a rigid base.

As compared with rubber blocks, the new rubber road dressing is cheap. While costing 50 or 75 per cent more than tar, it is said to be at least twice as durable. The labor cost is said to be 50 per cent less than for tar and the condition and durability of the road very much better. It is also stated that it costs 10 to 15 cents a square yard to tar Colombo roads, as compared with 20 cents for rubber, and from 35 to 40 cents for asphalt.

It was announced early in 1921 that the Municipal Commission in Singapore had appropriated $5,000 for experiments in rubber paving under the direction of the chief engineer. Hope was expressed that with the decline in rubber prices and the accumulation of stocks, as well as the successful outcome of the paving experiment, a new and considerable use for rubber would develop throughout the entire East, that would greatly relieve the plight of the planters.

The serviceability of a "terra caoutchouc" paving block invented by Lionel Cresson, rubber chemist for the Netherlands Gutta Percha Co., is being tested on a site granted by the Singapore Harbor Board. The results, so far, are said to be very encouraging. A pavement of the same block laid by the Singapore Rubber Works last spring at the entrance of the Malaya-Borneo Exhibition evoked much favorable comment. The block has a "rubber surface about ⅜-inch thick vulcanized firmly without a metal plate to a base of very hard cheap material."

A roadway recently paved with rubber blocks in front of the government offices, Kuala Lumpur, F. M. S., is also being studied with much interest. Each unit is composed of a rubber cap ½ to ¾-inch thick, secured under pressure to a concrete block by a continuous band of expanded metal. Each block measures 9 by 4 inches, but may vary in depth from 3 to 6 inches, according to traffic requirements. The blocks are laid upon concrete. They were invented by R. St. George Caulfield, executive engineer, Public Works Department, Federated Malay States, and have been made for 45 cents each, equal to about £1. 7*s*. 6*d*. a square yard.

South American Rubber Paving

An American consular report states that experiments are being made in South American cities with a pavement consisting largely of waste rubber and ground bark and which, while affording a firm, tough surface, is capable of sustaining a considerable amount of heavy load traffic and can be built at a cost rivaling that of the standard pavements.

A Brazilian concern capitalized at 2,500 contos, last summer sought prices from American machinery builders for apparatus with which to mold concrete blocks with rubber caps attached to metal to be anchored in concrete. The blocks, it is said, were to be used in paving streets in Rio de Janeiro.

Rubber Paving Elsewhere

A contract was recently awarded in Copenhagen, Denmark, for paving a stretch of street 220 yards long with rubber, the factory supplying the material, said to be of choice quality, assuring a life of fifty years for the pavement. The cost is given as about $5 a square yard.

Nineteen years ago some British journals, remarking that some successful trials had been made of rubber paving in Australia, details of which were not given, expressed regret that equal interest was not being taken in the same matter in the mother country.

The Latest Experiment

The illustration at the beginning of this article shows the laying of a new type of paving recently used in repairing a strip of roadway in Borough High street, Southwark, London, England. The invention, which has been developed after many experiments by Rubber Roadways, Limited, and manufactured by The Leyland & Birmingham Rubber Co., Limited, consists of the utilization of solid rubber blocks, grooved at the sides, and laid on the same kind of foundation as the standard wood paving block, while an application of pitch is made at their sides and ends. These new blocks, which replace the former composite ones (rubber surface with a concrete base), weigh 4 pounds 9 ounces each, and are of the same size as the ordinary wooden ones. Their wearing surface is of a better quality of rubber than the base, and it is believed that this new strip of paving will give even more satisfaction than the one which it replaces, laid several years ago. In a short time the same style of rubber block will be used for paving a small experimental area in St. Martin's Lane, London, W. C.

DR. EDWARD C. FRANKLIN, PROFESSOR OF ORGANIC CHEMISTRY AT Leland Stanford Junior University, and consulting chemist of the Ordnance Bureau of the army during the war, was recently elected president of the American Chemical Society, succeeding Dr. Edgar F. Smith, of the University of Pennsylvania.

Water Dispersions from Coagulated Rubber, Balata, and Gutta Percha—II

By John B. Tuttle[1]

IN THE first article of this series[2] the subjects of rubber latex, and water dispersions of coagulated rubber, were discussed. We are now ready to take up the matter of dispersing other materials which enter into commercial rubber compounds.

Dispersions of Other Materials

If we assume that the rubber manufacturer can use water dispersions of rubber, it is at once obvious to any rubber chemist that the following types would be of first importance:

(a) Rubber only.
(b) Rubber and sulphur together.
(c) Rubber and sulphur separately, which could be mixed and still hold the materials in dispersion.
(d) Rubber, sulphur, and organic accelerators, either singly or together.
(e) Mixed rubber compounds containing crude rubber, sulphur, accelerators, and mineral fillers.
(f) Various oils, resins, gums, etc., commonly used in rubber compounding.

Type (a) we have already described. The other types can be prepared in exactly the same fashion as that used in preparing rubber dispersions. We have already mentioned dispersions having been prepared from rubber, sulphur, and toron; to these we may add waxes such as paraffine, resins, and hard gums, accelerators such as aniline, etc. In some cases, two or more materials have been dispersed simultaneously; in others separate dispersions were made, mixed and vulcanized. For example, in one case rubber and sulphur were dispersed simultaneously, coagulated and the product washed and dried and vulcanized for 60 minutes at 45 pounds. A well-vulcanized slab was obtained.

Sufficient time has not yet elapsed to say how far this process can be carried on. While the entire list has not yet been covered, largely owing to a matter of time, it at least can be said that so far these products have not offered any unsurmountable obstacles. Other experiments seem to show that such dispersions can be mixed with some of the more common fillers such as litharge, zinc oxide, etc., and the rubber coagulated in such a fashion as to carry the pigments along with the rubber. Obviously, difficulties were encountered in keeping the pigments in uniform mixture so as to preserve a uniform composition, but a reasonable amount of care in coagulation has yielded good results and undoubtedly as experience is gained in handling such mixtures, much better results can be expected. It would be indeed surprising if the first attempts along this line yielded perfect results.

Significance of Rubber and Other Dispersions

The significance and real value of these dispersions may be studied from the following points of view:

(A) Uniformity.
(B) Cost.
(C) Compounding.

(A) UNIFORMITY. Any one who has any experience in introducing a new article in the rubber business knows what a high value the rubber manufacturers place upon the question of uniformity of their raw materials. It is probably no exaggeration to say that many materials have failed to gain a foothold solely because the sellers of these products have been unable to convince the manufacturers that their materials could be maintained on an absolutely uniformly standard scale. In view of this experience, it is somewhat of a shock to see the same manufacturers experimenting on a large scale with rubber latex which has been received in all sorts of conditions, and the history of the various lots absolutely unknown from beginning to end.

As we have said before, one of the most provoking features of the experiments made so far with rubber latex has been these great variations in the product as it is received in this country. The quality of the rubber itself was even more variable than the variation in the quality of different lots of crude rubber. As yet, it is doubtful if we have had enough experience with rubber latex to have developed adequate methods for testing the true quality of the rubber. In the case of ordinary plantation grades, most of us will admit that in spite of the vast amount of work which has been done, the problem is still far from solved. It is not our purpose to enter into any serious discussion of this phase of the subject at this time, except to point out that the lack of agreement on the subject is in itself sufficient proof that variation exists in the plantation grades. Naturally, we would expect this same variation to continue in part in the latex. Further than this, we have the variation in the percentage of rubber and, probably worst of all, the partial or entire coagulation of the rubber before the latex is received. The production of uniform quality in rubber products demands uniformity in raw materials; to this we will all agree, with but few qualifications. Such a condition seems difficult, although not necessarily impossible, to obtain in the rubber latex in its present state of development. Improvements can be and undoubtedly will be made if the demand for this material continues to such a point as to make it necessary and desirable, but, at least, we can definitely say that at the present time these difficulties in variations interfere tremendously in the development of a useful field for rubber latex.

As opposed to this, we have in the Pratt process a means of securing crude rubber of known and tested quality, and placing it in a dispersion of definite concentration, in such a form as to remain constant as to quality, concentration and freedom from coagulation. Were there no other points of advantage, these alone would suffice to show that dispersed rubber is vastly superior to rubber latex.

Rubber latex must be taken in the condition in which it is received; it may be diluted somewhat to get a definite uniform concentration; several lots may be mixed to obtain a certain degree of uniformity or average quality. Beyond these steps, control seems to be out of the question. On the other hand, dispersions of rubber can be made from rubber of known grades, at the plant where it is to be used, so that perfect control is feasible.

(B) COSTS. While we have stated that the differences in uniformity would suffice to make the rubber dispersions of greater value than latex, even if the costs were the same, it is easily possible to foresee that in this respect also the former will have the advantage over the rubber latex. While as yet no rubber dispersions have been prepared on a commercial scale, sufficient to enable costs to be calculated, enough has been done to show that it can be made on a large scale with the costs kept relatively low, particularly with reference to the labor item. The relative costs of rubber latex and rubber dispersions may be analyzed as follows:

(a) Rubber latex.
  1. Cost of latex delivered at the plantation factory.
  2. Drums.
  3. Preservation costs.
  4. Freight from factory to consumer.
  5. Loss through damage, premature coagulation, etc.

[1] Consulting chemist, 68 Bank street, New York, N. Y.
[2] THE INDIA RUBBER WORLD, January 1, 1923, pages 213-215.

(b) Dispersed Rubber.

1. Cost of crude rubber delivered at the consumer's plant.
2. Materials for dispersing.
3. Labor during process.

Rubber latex runs between 30 and 35 per cent of dried rubber, or, say, about 2¼ pounds per gallon. According to the quotations in THE INDIA RUBBER WORLD, on November 25, latex was quoted at $1.25 per gallon and pale crêpe at $0.24⅔ a pound. The true rubber in the latex would, therefore, cost about $0.55, or a differential of about $0.30 per pound. Against this differential, we must place the cost of items (b) *2* and (b) *3*, but on any reasonable sized scale these items cannot possibly approach anywhere near $0.30 per pound. With the improvements in the shipment of latex which undoubtedly will develop, if the demand for latex warrants it, no doubt this differential will be reduced somewhat below $0.30.

Kaye speaks about the saving in coagulating costs offsetting to a considerable degree the extra freight involved. While this saving might be appreciable, so far as English and Continental consumers are concerned, it applies with very little force to this country, where we have an additional 3,000 miles of ocean transportation and a possible 500 to 1,000 miles or more of railroad transportation after the latex reaches the port of entry (probably New York).

(C) COMPOUNDING. No matter how excellent the results may be when rubber latex or dispersed rubber is used with fabrics, there is always the feeling that so much better results could be obtained if it were only possible to incorporate with the rubber the other necessary compounding ingredients. As one manufacturer said to the writer a few weeks ago, "If we could only get some sulphur in there." At the present time, the procedure is to apply the rubber latex to the fabric and skim coat the fabric with a compound containing accelerator and sulphur, so that during vulcanization a sufficient quantity of these substances will migrate to the dried latex and thus effect a cure and produce a bond between the rubber from the latex and the skim coat. Fabrics containing sulphur in an available form, such as we find in toron-treated fabrics, would undoubtedly not require any such device. The writer has applied dispersed rubber to toron-treated fabric and vulcanized them for 70 minutes at 290 degrees F., and obtained an excellently cured product.

Even with the work progressing only as far as it has gone, the rubber compounder would have in the field of water dispersions quite a range of materials at his disposal. No attempts have been made as yet to make water dispersions of acid-reclaimed frictions, nor, indeed, of any other grades of reclaimed rubber. It does not seem incredible to expect that at least the first-named should yield to an intelligent attack. As to the other reclaims, the problem must be left for the future to develop.

The problem of making water dispersions of the accelerators has been scarcely touched. A few moderately successful ones have been made, which, in view of the small amount of time that has been put upon this phase of the entire problem, is sufficient assurance that it is really only a matter of giving the subject sufficient time and thought to obtain a satisfactory answer to the problem. Summing up briefly this phase of the matter, one entirely satisfactory accelerator dispersion has been prepared, and two others which were not quite so satisfactory but which could be used. It is not likely that it will be necessary to have all, or even the majority, of the known organic accelerators available in water dispersions, for we can probably get all of the results, so far as time and temperature of vulcanization are concerned, from a relatively small number of accelerators covering the range of slow and fast cures.

When we come to the mineral constituents, we have a more difficult problem. The effect of stirring will probably succeed in most cases in yielding a fairly uniform product. The writer has prepared a compound containing rubber, sulphur, aniline, and zinc oxide, which could be coagulated, washed and dried, and vulcanized to a well-vulcanized product.

Still another advantage which rubber dispersions have over rubber latex is in the question of concentration. Latex will run about 30 per cent of dry rubber; with rubber dispersions, even higher concentrations can be obtained, although just how high a concentration can be obtained is still to be determined. These higher concentrations will be particularly interesting, as they may afford an opportunity for mixing appreciable quantities of mineral pigments, and maintaining them in rather uniform suspension.

Vulcanization

So far, the best suggestion from Kaye regarding vulcanization of paper is the use of the so-called Peachey process, employing hydrogen sulphide and sulphur dioxide. In any thick article, sulphur chloride is out of the question. Hot vulcanization cannot be employed with Kaye's process because of his inability to introduce sulphur and accelerators. Under the Pratt system, hot vulcanization is quite practical. It is understood, of course, that any scheme of vulcanization which can be successfully employed with the Kaye process is equally applicable to the Pratt process.

To date, vulcanized rubber has been vulcanized to toron cloth, with no added sulphur or accelerator. There have also been cases of vulcanizing gray cloth with a mixture of rubber, sulphur and aniline dispersions, and mechanically mixed zinc oxide. These should suffice to show that the entire field can be covered.

Application to Industrial Processes

(1) PAPER INDUSTRY. We are unable at the present writing to explain why the American paper manufacturers have been unable to obtain any of the remarkable results which we hear have been obtained by our English cousins. Information has reached us that the subject has been a matter of considerable correspondence with Mr. Kaye which, it is hoped, will lead to his visiting this country in an endeavor to explain away all the troubles. His lectures or interviews should prove highly interesting, for placed in the dilemma of believing either that our American paper manufacturers are lacking in the skill necessary to make the process work, or that the results obtained abroad are not really all that is claimed for them, there seems to be only one choice for a loyal American to adopt.

The Pratt process is an entirely different proposition. It has already been emphasized that water dispersions of rubber are not the same as rubber latex, but have their own peculiar set of properties. Moreover, one is not limited to rubber alone, as in the Kaye process, but may include gums, resins, paraffine, and similar substances. Dispersions can be varied, with respect to the percentages, so as to obtain high rubber and low resins, or low rubber and high resins. There are vulcanization possibilities which are not possible with the Kaye process. We must, therefore, conclude that, notwithstanding the absence of satisfactory results obtained heretofore with the Kaye process, and even in spite of any successful results which may come in the future, the Pratt process is an entirely new and independent proposition, as yet untouched, and which does not depend upon the success of rubber latex for its own success.

Assuming that a small amount of rubber in paper may prove desirable, it is more than likely that this rubber would have even more desirable properties in the vulcanized than in the unvulcanized stage. One picture of the possibilities of the Pratt process will suffice to show the field wherein it may be used. It is planned, and with excellent prospects of success, to make a water dispersion of one of the so-called ultra-rapid accelerators. With these accelerators, it is well known that vulcanization can be effected in a very short time, at temperatures much below the normal temperatures of hot vulcanization. Given a definite speed of drying, and a more or less constant temperature of the drying rolls (both of which are feasible), it should be possible to add a rubber compound to paper which would give the desired degree of vulcanization during the time that the paper mat is passing through the drying roll. We would expect the rubber to produce a paper

with desirable flexing properties, and the gums and resins to add strength and other necessary properties.

(2) RUBBERIZED FABRICS. Hopkinson's patents show what can be expected when latex is applied to cotton, as, for example, in the manufacture of cord fabrics for tires. Again, it is pointed out that instead of being confined to the crude rubber alone, sulphur, oils, fillers, and accelerators can be introduced, so as to have a complete rubber friction in one operation. This fabric is then ready for skim-coating, after which it can be cut up for tire building.

The experiments mentioned above in connection with treating toronized fabrics with water dispersions of rubber show that it is not necessary to depend upon any sulphur, accelerator, or oil if we do not wish to do so. In this process, the square-woven, or cord fabrics, which have been treated according to the toron process, would be passed through a bath of a water dispersion of rubber, dried, skim-coated, and the finished fabrics sent to the bias cutters. It has been demonstrated on a number of occasions that the sulphur terpenes, known commercially as "Toron," carry sulphur in combination which can be taken up by the rubber during the vulcanization process.

Between these two general processes, (a) treating gray fabrics with water dispersions of rubber friction compounds, and (b) treating toronized fabrics with water dispersions of rubber only, any type of fabric which is either calendered or spread can be treated. It is worthy of mention at this time that by substituting water dispersions of rubber, or rubber compounds, in place of the old-fashioned spreading process, the loss of solvent or the necessity for solvent recovery is eliminated, either of which adds considerable to the expense of the operation.

(3) WATERPROOF CLOTH. These water dispersions should open up a new field in the preparation of water-repellent garments. The treatment need not necessarily be confined to the so-called raincoats only, but can extend it to army and navy uniforms, outdoor garments in general, and in fact any clothing which may be worn under conditions in which the wearer is exposed to rain.

In making light-weight balloon fabrics which would at the same time have very low permeability to hydrogen and other gases used in balloons, some excellent results have been obtained with the use of cellulose acetate and nitrate. Unfortunately, it has been found that these coatings by themselves do not give the flexing and durable properties that are desired. There seems to be considerable separation of the cellulose coating from the cotton cloth. One method of getting around this has been to first treat the cloth with a thin film of rubber, using the ordinary spreader for the purpose. Unfortunately, the affinity between the rubber and untreated cloth is not sufficient to give the full degree of adhesion desired. Unquestionably better penetration of the fabric could be obtained with the use of water dispersion of rubber, giving a coating which will afford a firm and lasting bond with a cellulose compound.

AMERICAN COTTON FABRIC CORPORATION ORGANIZED

The recent establishment of the American Cotton Fabric Corporation (a Massachusetts concern) represents a merger of five organizations, with properties located at New Bedford and Fall River, Massachusetts, and Passaic, New Jersey. All the plants in question are well equipped with the most modern machinery, and have been maintained in an excellent state of efficiency. During the past five years the gross sales of these companies averaged more than $33,000,000 annually, while the mills contain a total of approximately 250,000 spinning spindles, 100,000 twisting spindles, and 800 heavy automatic looms.

Taylor, Armitage & Eagles, Inc., will continue to act as agents for the new corporation as they did for its predecessor, the Passaic Cotton Mills, and affiliated companies. Operations at the plants will include the spinning and weaving of Egyptian and American staple cotton into combed and carded yarns and fabrics for automobile tires.

Interesting Letters from Our Readers

Philippine Bureau Interested

TO THE EDITOR:

DEAR SIR: In reply to your letter of August 7, 1922, addressed to the Honorable, the Secretary of Agriculture and Natural Resources, and indorsed to this Bureau, regarding the supply of rubber latex, I have the honor to advise that a true copy of your letter has been forwarded to the Director, Bureau of Commerce and Industry, and to the managers of the following named rubber plantations: Basiaoan Plantation Co., Davao; Culaman Plantation Co., Davao; Basilan Plantation Co., Basilan, Zamboanga; Balactasan Plantation Co., Zamboanga.

This Bureau has no data on the market supply of rubber latex.

SILVERIO APOSTOL,
Manila, P. I. Acting Director of Agriculture.

No Latex from Dutch Guiana

TO THE EDITOR:

DEAR SIR: Replying to yours of August 7, I beg to inform you that rubber latex was not produced by the plantations of this colony since 1918. Nearly 2,000 acres cultivated with *Hevea brasiliensis* were totally ruined by the South American Hevea leaf disease. At present balata only is exported from Surinam.

DIRECTOR OF AGRICULTURE, INDUSTRY AND COMMERCE.
Paramaribo, Dutch Guiana.

Judicial Decisions

Appraisers' Decisions

No. 45,499.—Protests 938,267, etc., of Max Kalter Mercantile Co. et al. (New York).

RUBBER BOOTS—COTTON AND INDIA RUBBER WEARING APPAREL—MANUFACTURES OF RUBBER.—Rubber boots representing certain surplus army supplies purchased from the British Government, and assessed with duty at 30 per cent ad valorem under paragraph 256, tariff act of 1913, were claimed dutiable at 10 per cent under paragraph 368, as manufactures in chief value of India rubber.

Opinion by WELLER, G. A. Testimony introduced after the granting of a rehearing proved a certain quantity of the rubber boots to be properly dutiable as claimed, but as to the balance of the merchandise the protests were overruled.—*Treasury Decisions*, Vol. 43, No. 2, January 11, 1923.

U. S. Heel Patent Not Infringed

A final decision rendered by the United States Circuit Court of Appeals at Chicago reverses the former decree of a lower court in connection with the case of The I. T. S. Rubber Co., vs. United States Rubber Co., the concavo-convex heel manufactured by the latter organization having been found not to infringe the I. T. S. Rubber Company's patent. Sales of this particular type of heel constitute only a small part of the United States Rubber Company's rubber heel business.

MOTOR AND ACCESSORY MANUFACTURERS' ASSOCIATION FIFTEENTH ANNUAL BANQUET

About 600 members and friends of The Motor & Accessory Manufacturers' Association were present at the fifteenth annual banquet, held January 10 at the Hotel Commodore, New York, N. Y. Among the enjoyable features of the occasion was a vaudeville show, "Sketches in Black and White," this being followed by a plantation revue entitled "Away Down South."

"PNEUMATIC TIRES," "CRUDE RUBBER AND COMPOUNDING INGREDIENTS," and "RUBBER MACHINERY," by Henry C. Pearson, cover these subjects in a comprehensive and authoritative manner. They should be in the library of every progressive rubber man.

Steam Consumption of Tire Press Vulcanizers

By Carl F. Rett[1]

IN the following abstract the relative economy of the two usual types of hydraulic press vulcanizers is set forth, with the omission, however, of much mathematical data and detail of calculation.

Present Equipment

The real beginning in commercial vulcanizers may be said to have started about 1908 with the entrance of the smaller companies into the manufacture of automobile tires. From that time to the present, production has centered on practically two types of hydraulic press vulcanizers, as shown in the accompanying illustration.

It will be noticed that both are practically of the same capacity and embody the same elementary principles as regards operation, the only real difference being in the method of construction. Type A is of massive and liberal design. In the case of one make its total weight runs to 41,030 pounds while the weight of Type B totals 33,200 pounds or nearly 25 per cent less.

Some tire manufacturers believe in the installation of heavy equipment and a low depreciation and maintenance and others believe in lighter weight and greater production efficiency with a higher factor of depreciation and maintenance.

Economy of Equipment

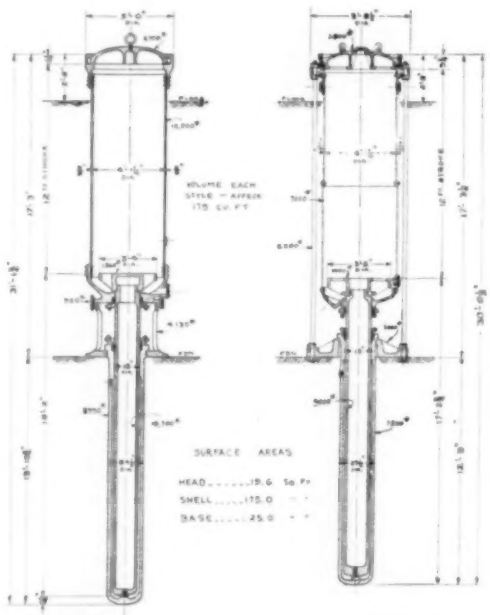
The question confronting the prospective customer of this equipment should be that of efficiency, for life of either type is not very long, rarely exceeding ten years.

The use of automatic conveying and handling machinery as well as steel molds and in fact the use of anything to shorten the time of vulcanization so to derive the greatest efficiency is severe on this class of machinery. The frequent heating and cooling, together with faulty maintenance, will eventually cause all troubles to appear at once, indicating that the best and cheapest way out of the difficulty is to purchase new equipment and scrap the old.

A hydraulic press vulcanizer is not as efficient as some other parts of tire making equipment. Its operating losses are tremendous. The manufacturer's effort to obtain highest efficiency by the utilization of auxiliary machinery and shorter periods of vulcanization, even though he sacrifice the life of the vulcanizer, will yield him better returns on his investment than it would bring without such efforts.

If the reader considers that the most efficient arrangement of vulcanizing presses and auxiliary conveying equipment at the present time demands a floor space of approximately one square foot to each tire vulcanized per day of 24 hours he will see what is meant by the vulcanizer being inefficient in itself. The original tire vulcanizer arrangements, some examples of which are in use today, require on the average approximately three square feet of floor space per tire vulcanized per 24 hours.

Whatever considerations are given to the vulcanization of tires applies equally to cord and fabric construction, because the demand for cord tires will cause the efficiency of their production to equal that obtained in fabric tires which are being produced in the most efficient manner known.



TYPE A TYPE B

Standard Tire Press Vulcanizers

Advantages of Steam for Vulcanizing

Although experiments are being made to vulcanize tires by electrical means and have met with some success, yet vulcanization by steam, established by long practice, cannot be disregarded, and it possesses certain advantages.

Steam will circulate about the molds in all directions when under pressure, giving up its latent heat to the tire uniformly, which condition has been very difficult to attain by electrical means. If some means is ever found to vulcanize electrically, the writer ventures to mention that no use will be made of molds in their present condition, for the reason that the molecular structure of the metal used is not uniform in magnetic permeability or electrical conductivity to the extent that heat will be distributed to the tire uniformly in all directions.

Steam under pressure gives up its latent heat wherever it comes in contact with a cooler surface. Inasmuch as steam at a certain pressure has a certain temperature it is only necessary to maintain the predetermined pressure to insure proper heating of the metal mass to produce the chemical action of vulcanization.

Steel molds cost more than iron but they easily pay for themselves in obtaining greater efficiency of the vulcanizer, represented by increase in number of tires vulcanized per day with the given equipment.

Factors Determining Steam Consumption

In order to calculate the steam consumption, or water rate, of vulcanizers consideration must be given to the following: (1) heat loss of the insulation, and the heat absorption (2) by the shell of the vulcanizer, (3) by the molds, and (4) by the tires. The data required to be known is as follows: room temperature, thickness and kind of insulation, area of insulated portion, area of uninsulated portion, time of vulcanization, weight of shell, temperature difference of shell, material of shell, weight of molds, material of molds, temperature difference of molds, weight of tires, temperature difference of tires, steam pressure for vulcanization, and volume of steam space in vulcanizer.

Steam Consumption

Based on these data calculations of the relative steam consumption for the four conditions following have been made:

I. Vulcanizer, Type A, using cast iron molds.
II. Vulcanizer, Type A, using cast steel molds.
III. Vulcanizer, Type B, using cast iron molds.
IV. Vulcanizer, Type B, using cast steel molds.

[1] Chief Engineer, Lambert Tire & Rubber Co., Akron, Ohio.

In each instance the vulcanizer shells were covered two inches thick with 85 per cent magnesia insulation and the heads were bare.

The weight of steam consumed, water rate, is found by dividing the total heat loss and absorbed, by the latent heat of the steam corresponding to the pressure used, and adding the weight of steam to fill the vulcanizer. In the cases mentioned above the steam consumed expressed in pounds of water were: I, 765.6; II, 729.7; III, 707, and IV, 671.1. From this it will be noted that greatest condensation results in the use of type A vulcanizer with cast iron molds, and the least in type B vulcanizer using cast steel molds. In this connection there is a saving of 94.5 pounds between extremes in each run, or heat of 90 minutes. Figuring 12 heats per 24 hours there is a saving of 1,134 pounds of steam, or water.

The relative boiler horse powers required to effect vulcanization in the cases mentioned above were as follows, I, 24.4; II, 24.2; III, 23.4 and IV, 22.2.

Conveyor System for Compound and Mill Rooms

By W. C. Hoover[1]

THE following abstract briefly describes a combination power and gravity system for serving the compounding needs of a large rubber mixing department.

Description of the System

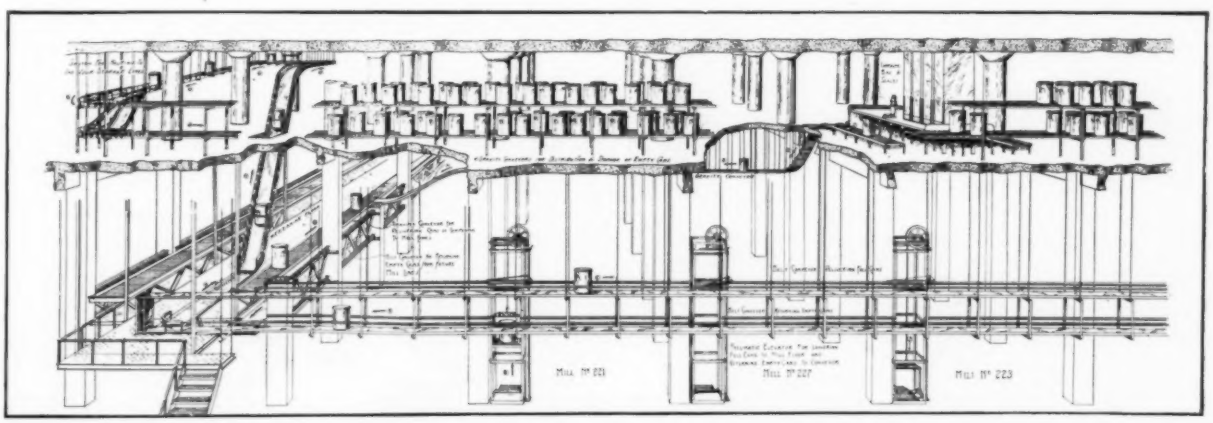
A general view of the conveyor system as operated is shown in the illustration. All pigments and gum are delivered to the mill room in steel containers of uniform size. Empty containers are delivered from the mezzanine floor just above the mixing mill floor, up the 45-degree inclined elevator to the gravity roller conveyor suspended from the ceiling of the second floor. The containers are automatically discharged from this elevator to the gravity roller conveyor and travel by gravity to the four gravity roller storage lines supported on the second floor.

The transfer of the containers from the main feeder line to the four storage lines is accomplished by a hand operated switch and hinged section. The empty containers travel by gravity on the storage lines to the pigment weighing bins. Ten lines of gravity roller conveyors are set level beside the pigment weighing bins. The empty containers are transferred by the operators from the empty container storage lines at the pigment weighing bins to the ten lines of gravity roller conveyors as needed. The containers are pushed over the roller conveyors from operator to operator until all the ingredients which make up the batch are added. A section of the roller conveyor adjacent to the inclined lowering machines is installed on the platform of a self-registering scale where all batches are checked for weight before passing to the inclined lowering machines.

Travel of the Loaded Container

The loaded container is automatically transferred from the lowering machines to the gravity roller storage lines suspended from the ceiling of the first floor. At the end of the gravity storage lines steel slides connect the gravity roller conveyor and the flat roller conveyor located on a platform just above the mezzanine floor. This roller conveyor is called the receiving line. Operators stationed on the platform receive the filled containers and transfer them to the upper belt of the two-way conveyor. By operating an air cock the deflectors on the particular two-way conveyor over which the container travels are opened and deflect it from the two-way belt conveyor to the vertical lift adjacent to the mill on the first floor. When the loaded conveyor passes onto the platform of the vertical lift the deflector or gate that was opened to receive the container automatically closes.

When the mill operator is in need of a batch of stock he releases a catch and the vertical lift car lowers by gravity to the floor. Here the car automatically tilts and discharges the container onto a small truck. After the loaded container is removed the mill operator places an empty container on the car of the vertical lift, releasing a catch, and the car rises and discharges the container onto the lower belt of the two-way belt conveyor. The car then moves upward to its original position to receive another loaded container. These operations are all automatic.



The B. F. Goodrich Co., Akron, Ohio.

Lamson Conveyor System for Delivering Rubber Compounds to Mills

Travel of the Empty Container

The empty container travels over the lower half of the two-way belt conveyor to a one-way belt conveyor running at right angles to the former. Connection is made between the lower half of the one-way belt conveyor and the 45-degree inclined ele-

[1]Department of Design, The B. F. Goodrich Co., Akron, Ohio.

vator by means of short sections of roller conveyor set at the proper pitch so that the container travels to the one-way belt container and from it to the 45-degree inclined elevator, by gravity. The empty container travels on the one-way belt conveyor and is automatically transferred to the 45-degree inclined elevator, where the container starts another circuit of the system.

The containers are automatically transferred from one unit to another except in the following instances: (1) Where the empty containers are transferred from the empty container storage lines to the compound assembling lines; (2) where the operator on the mezzanine floor transfers the loaded containers from the storage conveyors to the two-way belt conveyors; (3) where the mill operator removes the loaded container from the vertical lift and replaces the empty container.

Capacity of the System

The fifty 24 by 84-inch mixing mills have a normal production of 500,000 pounds of stock in 24 hours. Each mixing mill receives a loaded container every 35 minutes, 41 loaded every 24 hours. The system is designed for 300 loaded containers an hour or 7,200 in 24 hours. The four lines of empty container storage conveyors on the second floor have a storage capacity of 450 containers. The gravity loaded container storage lines suspended from the ceiling of the mill room have a capacity of 1,200 containers. An empty container weighs 50 pounds, and loaded 300 pounds.

Results

Elimination of 29 mill room helpers moving empty and loaded containers between mills and elevators, three elevator operators, and one 10,000-pound elevator results. There is saved 12,000 square feet of floor space by having loaded container conveyors suspended from the mill room ceiling. An increased production from weighmen is assured as well as elimination of confusion in the mill and compound rooms caused by trucks and containers being moved about by hand.

Inventor of the Alkali Reclaiming Process

ARTHUR HUDSON MARKS, chemist, inventor, and rubber manufacturer, of Akron, Ohio, was born in 1874 at Lynn, Massachusetts. He was educated in the Lynn High School and was graduated from Harvard University in 1894. The following year he secured the position of assistant chemist for the Boston Woven Hose & Rubber Co., Cambridge, Massachusetts, and in 1897 resigned to become chief chemist for the Revere Rubber Co., Chelsea, Massachusetts.

Arthur H. Marks

In 1898, in company with W. B. Miller, he identified himself with the Diamond Rubber Co. as superintendent, and was later elected vice-president and general manager. With them were W. B. Hardy and A. H. Noah, and under this organization the company grew rapidly. Meanwhile, on October 17, 1899, Mr. Marks was granted a patent for his well-known alkali reclaiming process of devulcanizing rubber by the use of high steam pressure and dilute caustic soda, and the organization of the Alkali Rubber Co., Northwestern Rubber Co., Limited, Pan American Rubber Co., and International Process Co. soon followed, Mr. Marks being president of all these companies.

The Marks patent, which has figured so prominently in the rubber reclaiming industry, has been owned successively by the Diamond Rubber Co., The B. F. Goodrich Co. and the Alkali Rubber Co. It was finally acquired by the Philadelphia Rubber Works Co. when that firm was consolidated with the Alkali company. Although it figured in infringement litigation for several years, the higher courts held it valid. Notable among Mr. Marks' other patents is a guayule extraction process and a woven wire fabric base for solid tires.

In 1912 the affairs of the Diamond Rubber Co. and The B. F. Goodrich Co. were merged. Located on opposite sides of the same street in Akron, Ohio, they had long had many interests in common. Mr. Marks was then elected vice-president and general manager of the Goodrich company, continuing in that capacity until 1917.

When the United States entered the World War he patriotically gave up his business activities to devote his services to the Government in shipbuilding, and was commissioned a lieutenant-commander. A skilled and enthusiastic yachtsman, owner of the yacht "Aramis," his expert knowledge was of great value to his country. It was during this period, on December 22, 1917, that he married Mrs. Lydia Locke Harrold, formerly Lady Talbot, of England.

Since the coming of peace Mr. Marks has spent much of his time at "Elmcourt," his great country estate west of Akron, one of the principal show places of the Rubber City. Hospital and benevolent work have had much of his attention and support. In 1920, however, he acquired a large interest in the Van der Linde Rubber Co., Limited, Toronto, Canada, of which he is now vice-president and a director.

Cold type in no way does justice to Mr. Marks' personality or to his achievements. Cool, self-contained, boyish, he became a millionaire almost over night, and not through the great growth of the tire business.

When rubber was more than a dollar a pound he contracted for vast quantities of Pontianak, built a closely guarded extraction plant and had a fine grade of rubber costing about 50 cents a pound. Once when Pará rubber was low he bought great quantities, far more than he could use, and sold to other manufacturers later at a handsome profit. When guayule came to the front he was one of the first to use it successfully, through his own extraction process. When the Doughty bicycle tire press used by the Dunlop company appeared, he invented a press of his own and had a five-minute cure in operation while others were debating its value.

His alkali royalties in the United States, Canada, England and Germany were enormous. He did things in his own way and on a big scale. For example, he was trying to hire an eastern superintendent at his own figure, but the man had a $20,000 farm that he hated to leave. Mr. Marks wrote a check for $20,000 and got his man.

With all his sudden success he was always modest. When offered the presidency of the Diamond company, he said: "Let me stay as vice-president, we do not want a kid president. I am but thirty-five."

EGYPTIAN COTTON CROP NEWS BY RADIO

In order to facilitate the placing of important crop news in the hands of American farmers and others interested, the United States Department of Agriculture has announced that reports concerning Egyptian cotton will be dispatched by cable or radio to this country. It is believed that this connection between the United States and Egypt will be of great benefit to all concerned.

What the Rubber Chemists Are Doing

Effect of Acetone-Soluble Constituents of Rubber on the Vulcanizing Properties[1]

By Henry P. Stevens

MAINLY as the result of the work of D. Spence, L. Weber, and the author[2], it was shown ten years ago that the rate of vulcanization and physical properties of rubber were dependent upon certain active ingredients present in small amounts in the crude rubber. These could be removed (1) with the insoluble matter (mainly nitrogenous) or (2) with the acetone-soluble portion. That latter also contains nitrogen but in relatively small amount. The complete removal of the insoluble constituents resulted in a rubber which, when mixed with sulphur, would hardly vulcanize. Extraction with acetone had little or no effect on rate of vulcanization of this rubber-sulphur "mix," whether the rubber had been previously freed from the insoluble constituent or not. If, however, vulcanization be carried out with a "mix" containing litharge as well as sulphur, it was found that previous extraction of the rubber with acetone has a profound effect on rate of vulcanizing; the rubber shows very inferior mechanical properties and a low percentage of combined sulphur. The acetone-soluble constituents appear to play the same part in a litharge mix as do the insoluble (nitrogenous) constituents in a simple rubber-sulphur mix.

The next stage was the discovery of the rapid vulcanizing properties of "matured," that is putrefied coagulum (Eaton and others), and the separation from such rubber of the nitrogenous bases which were apparently the cause of the rapid vulcanizing properties. These bases were not found, or were present in a very small proportion, in crêpe as ordinarily prepared. Little doubt exists that these bases are putrefaction bases, as such are known to act as vulcanization catalysts. These observations threw some light on the variations noted in the rate of vulcanization of Pará rubber, but it soon became evident that much still remained obscure. For instance, rubber normally prepared contains but little nitrogenous base, and removal of this base by extraction with acetone, or treatment with weak acid, has relatively little effect on the rate of vulcanization. It is obvious that the insoluble matter (as removed by benzene treatment) must contain the bulk of the substances which enable the ordinarily prepared rubber to vulcanize normally and that these substances are not readily soluble bases like the putrefaction bases extracted from "matured" rubber.

As already stated, these acetone-soluble bases account for the fast vulcanizing properties of "matured" rubber. Ordinary crêpe contains little or no soluble bases, consequently acetone extraction has only a slight effect on the rate of cure. Crêpe will, however, vary in this respect, accordingly some samples respond to a greater extent than others to acetone extraction when vulcanizing with sulphur only. Martin and Elliott in a recent paper[3] have shown that sheet rubber is more susceptible than crêpe rubber in this respect, while "matured" (slab) rubber is markedly affected. The rate of vulcanization of ordinary crêpe rubber can be almost doubled by the addition of 2 per cent of acetone extract from "slab" rubber. These authors also show that there is probably some correlation between the amount of acetone extract and rate of vulcanization. These results fall in very well with the foregoing conclusions that slab rubber owes its rapid rate of vulcanization to putrefactive bases. On the other hand, there are certain published data which are difficult to reconcile with the views expressed. Kratz and Flower, in the course of their work on accelerators, record an instance in which the coefficient of a sample of rubber was *increased* from 0.58 to 0.83 as a result of 36 hours' acetone extraction. Another sample of rubber treated in the same manner gave a negligible decrease[4].

As already explained, the insoluble constituents must contain a catalyst or catalysts insoluble both in benzene and acetone, and these probably consist of nitrogenous substances more complex than the acetone-soluble bases. It is well known that rubber obtained by evaporating latex to dryness on a steam bath vulcanizes rapidly, and in this respect is comparable with "slab." As, however, the temperature employed excludes the possibility of putrefaction, the fast vulcanization properties of evaporated latex cannot be attributed to putrefaction bases; moreover, extraction with acetone or water has no appreciable effect on the coefficient. This applies to latex whether air-dried, sun-dried, or steam-oven-dried. So prepared the rubber vulcanizes approximately three times as fast as ordinary crêpe.

Conclusions

1. Extraction of evaporated whole latex with water or acetone either causes a small decrease in rate of vulcanization or it is without effect.
2. Extraction of ordinary pale crêpe may increase or slightly decrease the rate of vulcanization or may be without effect. The specimen examined on this occasion was unaffected by acetone, but showed a small increase as the result of water extraction.
3. Extraction of alcohol-coagulated latex with water or acetone results in an appreciable increase in rate of vulcanization.
4. The alkaline slimes from the surface of matured rubber contain appreciable quantities of organic bases, part of which is volatile. Similar bases are obtained by soaking evaporated latex in water. The accelerating effect of these bases is small.
5. The surface and interior portions of putrefied coagulum may show considerable differences in rate of vulcanization.
6. The formation of putrefaction bases is probably sufficient to account for the high rate of vulcanization of "slab" or other "matured" rubber, but does not account for the high rate of vulcanization of evaporated "whole" latex or of alcohol-coagulated latex.
7. The correlation between the amount of acetone extract and rate of vulcanization is not directly connected with the presence of putrefaction bases, as acetone extraction, which should remove the bases, may result in a more rapid vulcanizing rubber.

[1] Journal of the Society of Chemical Industry, September 30, 1922, 326 T.
[2] For references see "Plantation Rubber and the Testing of Rubber," by G. S. Whitby.
[3] Journal of the Society of Chemical Industry, 1922, 226 T.
[4] Journal of Industrial and Engineering Chemistry, 1920, 12, 971.

Acceleration of Vulcanization by Cinchona Alkaloids[1]

In an investigation on a residue obtained from cinchona bark, comparative experiments have been carried out on pure rubber-sulphur and rubber-sulphur-zinc oxide mixes, with the object of determining the accelerating effect of quinine, cinchonine, cinchonidine, and a mixture of the uncrystallizable alkaloids of cinchona bark known pharmaceutically as quinoidine.

The particular residue under investigation (Accelerator X) is stated to contain the amorphous alkaloids remaining after the separation of quinine and other crystalline alkaloids from the extract of the total alkaloids in cinchona bark. It is understood that the material is being used in certain rubber manufactories in England, and it appears that American rubber manufacturers have been acquainted with its use for some years.

[1] B. J. Eaton, and R. O. Bishop. Journal of the Society of Chemical Industry, December 30, 1922, 374T-376T.

Accelerator X is a brown, somewhat deliquescent substance which is very sticky under the moist, hot atmospheric conditions in Malaya. The solubility in water is slight, but in alcohol 95 per cent by volume, complete solution can be effected. It is basic, soluble in acids and reprecipitated by alkalis, and has a distinct odor of quinoline and benzaldehyde. The nitrogen content, as determined by Kjeldahl's method, is 2.52 per cent.

In the investigations described the accelerator was dissolved in 95 per cent alcohol to produce a 20 per cent solution. Different volumes of this solution were allowed to drip on to the raw rubber, in the form of crêpe, from a pipette. The samples of rubber thus treated were left exposed on glass plates until the alcohol had completely evaporated. A test was made on rubber treated with alcohol alone, which was found to vulcanize at the same rate as a control sample.

The subsequent addition of sulphur or sulphur and zinc oxide and the milling and calendering of the mix were carried out according to the standard practice adopted in this laboratory (Bulletin 27, Department Agriculture, F. M. S., 1918). Vulcanization was carried out in molds in a steam autoclave at 140 degrees C. The vulcanized samples were cut in the form of rings and these were tested on a Schopper testing machine in the usual manner, 24 hours after vulcanization.

The results of the cures are judged by comparing the stress-strain curves with the "standard" curve (Bulletin 27) and by a comparison of the stress-strain figures at break.

In order to compare the effect of Accelerator X with that of the crystalline alkaloids quinine, cinchonine, and cinchonidine and with the product known as quinoidine, a further series of vulcanizations were carried out, with two types of mixings, as below:

Mix. A.		Mix. B.	
Rubber	90	Rubber	90
Sulphur	10	Sulphur	10
Alkaloid	1	Zinc oxide	4
		Alkaloid	1

In both series the pure alkaloid was added in the form of the solid crystals to the rubber during the mixing process.

Conclusions

(1) All the cinchona alkaloidal bases used, viz., quinine, cinchonine, cinchonidine, quinoidine, and Accelerator X, are fairly powerful accelerators.

(2) Quinine, cinchonine, and cinchonidine appear to be practically identical in their accelerating effect.

(3) Quinoidine and Accelerator X are not as powerful as quinine, cinchonine, and cinchonidine, but they are possibly not pure amorphous alkaloidal bases, and probably contain a certain quantity of inert constituents which have no accelerating effect on vulcanization.

(4) As one of us has shown previously, although the addition of organic and inorganic accelerators accelerated the vulcanization of a slow-curing crêpe rubber relatively to a much greater extent than that of a naturally rapid-curing slab rubber, the differences between a naturally rapid and a slow-curing rubber still exist after the addition of the artificial accelerator, *i. e.*, the slab or fast-curing samples still cure rather more rapidly than the crêpe or slow-curing rubber, both when (a) accelerator alone is added, and (b) accelerator plus zinc oxide is added.

(5) Generally, the superiority of the slab rubber samples containing the added accelerator compared with the crêpe samples is maintained, but is not so marked except in the case of the samples to which zinc oxide has been added.

(6) The addition of zinc oxide accelerates the rate of vulcanization of all the samples. It is not possible, however, to judge the samples containing zinc oxide by the same tensile curve used for the pure rubber-sulphur mixings, since the curve is different in type, and the highest tensile figures for the samples containing zinc oxide are obtained in the case of a curve indicating an "over-cured" rubber, as judged by the standard curve employed in comparing tests on pure rubber-sulphur mixings.

(7) The results show that Accelerator X is probably a very useful organic accelerator, and also indicate that it probably consists of the amorphous alkaloids of cinchona bark known technically as quinoidine. Since this product is otherwise a waste product, it should be comparatively inexpensive compared with many artificial organic vulcanization accelerators on the market.

No attempt has been made to isolate a more active accelerator from the crude product (Accelerator X) nor from quinoidine, neither have we determined whether all or any of the accelerator in these products is volatile in steam. It is proposed to continue the investigation on these points.

Pink Spots on Rubber[1]

Pink spots on rubber tree scrap is caused by *Bacillus prodigiosis*, which develops only in the presence of moisture and air. The spot does not affect other rubber except by direct contact with wet rubber, and so far as known, it does not affect the real quality of the rubber.—B. J. Eaton, Malayan Agricultural Journal, 10, 18-21, 1922. Influence of Large Cuts on the Chemical Composition of Hevea Latex.

[1] H. Afisz. Bulletin Agriculture l'Institut of Science, Saigon, 2, 1920, 311-312.

Natural and Artificial Aging of Vulcanized Rubber[1]

Tests similar to those of Geer and Evans made in a thermostat at 77 degrees C. showed a negative pyrrole reaction, a reduction of tensile strength to almost zero, and an increase in alcoholic extract. It is concluded that artificial and natural aging are virtually identical, chemically and physically. A very advanced physical deterioration is reached when less than ten per cent of the rubber is oxydized.

[1] G. Bruni. The India Rubber Journal, 1922, 63, 814.

Latex and Rubber from Different Trees III[1]

Twelve good yielding trees, on one estate, gave from 6.9 to 68.4 grams of rubber per day. The rubber content of the latex varied from 25 to 46 per cent, and, although often very constant over long periods for one tree, sometimes underwent change from alteration in tapping system and other causes. The rate of vulcanization was fairly constant for each tree. Wide variations were found in the viscosity, which was not always constant for the same tree.

[1] O. de Vries, Communications Central Rubber Station, Buitenzog, 1922, No. 29, 146-162.

Latex and Rubber from Young Trees[1]

In the rubber from trees between 6 and 15 years old the differences in properties are small. With trees 3 to 4½ years old the rubber content of the latex was low and the specific gravity tended to be high. The rubber showed marked shortness and the viscosity was very low. The rate of vulcanization was exceptionally high. In slope and tensile strength the vulcanized rubber was inferior to the product from older trees.

[1] O. de Vries, Communications Central Rubber Station, Buitenzorg, 1922, No. 31, 296-309.

Function of Calcium Chloride in Coagulation of Latex of Hevea Braziliensis[1]

Calcium chloride solution hastens coagulation and increases the yield of rubber. The rubber thus obtained contains calcium phosphate and chloride in percentages varying as the amount of the solution added. It is concluded that the calcium reacts with the

[1] G. Vernet, Comptes Rendu, 1922, 175, 719-721.

soluble phosphates of the latex, forming calcium phosphate, which is incorporated in the rubber, and the resulting chloride causes protein coagulation. The normal coagulation is more complete. The increased weight of product is due to all three factors.

Recovery of Volatile Solvents[1]

The solvents used in the rubber industry may be recovered by methods of absorption, compression or cooling. In case the solvent vapor is diluted with a large volume of air the absorption method is best. In the case of concentrated vapors a compression method becomes available. Benzene used in impregnating cord tire fabric can be recovered with an efficiency of 90 per cent by enclosing the impregnating apparatus and passing the vapors through an absorption tower. The danger of fire or explosion may be eliminated by passing flue gas into the apparatus.

[1] W. K. Lewis. Science, 1920, 52, 297.

Microscopy of Paint and Rubber Pigments[1]

Only three of the possible uses of pigment microscopy are touched upon in this paper, namely, pigment identification, particle size measurement, and the study of pigment flocculation. The author's expressed intention in the preparation of his paper is to lay down the elementary principles upon which to erect a new science—the science of the microscopy of paint and rubber pigments.

The article discusses the apparatus used in pigment study by the microscope and mounting specimens for photomicrographs. Reference is made to instructions on how to attain perfect mounts, contained in an earlier article by the author in the Journal of the Franklin Institute, November, 1921. The characteristics of common pigments are described and illustrated in a series of photomicrographs.

[1] Henry Green, Chemical and Metallurgical Engineering, January 10, 1922, 53-57.

Chemical Patents

The United States

VULCANIZED OIL PRODUCT. The process of producing vulcanized oil products which comprises reacting upon a fatty oil with sulphur chloride in excess of the amount required to produce vulcanization and thereafter bringing the resulting product into contact with water.—Walter O. Snelling, Allentown, Pennsylvania. United States patent 1,430,034.

CAOUTCHOUC COMPOSITION. A composition comprising a caoutchouc latex and casein.—Arthur Biddle, Trenton, New Jersey, assignor to United States Products Corporation of America, United States patent No. 1,437,487.

RUBBER COMPOSITION. A filler for rubber compositions each particle of which is enclosed in an envelop of an adhesive material for binding the particle firmly to the rubber.—Robert R. Williams, Roselle, New Jersey, assignor to Western Electric Co., Inc., New York, N. Y. United States patent No. 1,438,735.

VULCANIZING RUBBER. Process of vulcanizing which comprises adding to a vulcanizable mixture of rubber and other substances a small proportion of a compound containing in its composition the furyl radicle and nitrogen that acts as accelerator and vitalizer.—Eloi Richard, assignor to Société Richard, Allenet & Cie, both of Melle, France. United States patent No. 1,440,176.

The Dominion of Canada

RUBBER AND EBONITE SUBSTITUTE.—Process for the manufacturing of a rubber or ebonite substitute by heating a mixture of an unsaturated organic acid, a vulcanizable oil, and sulphur.—Herman Plauson, Hamburg, Germany. Canadian patent No. 226,632.

PRODUCTION OF COLLOID POWDER. The process of preparing a colloid powder, which includes mechanically converting a gel colloid into a sol in a non-solvent dispersion medium and adding a hardening agent.—Herman Plauson, Hanover, Germany. Canadian patent No. 226,634.

The United Kingdom

PERMEABLE SHEET MATERIAL. Artificial leather, etc., is made by mixing plastic material such as a rubber mixing or nitrocellulose composition with a filler holding a liquid or gaseous pore producing agent, and setting the sheet in a pliable permeable condition. The sheet is preferably made on or applied to a fabric backing.—W. A. Gibbons and H. W. Ritter, 561 West Fifty-eighth street, New York, N. Y. British patent No. 177,778. Not yet accepted.

CELLULAR RUBBER MATERIAL. A mixture of raw rubber, sulphur or other vulcanizing agents, and finely divided charcoal is shaped into the desired form and treated under high pressure in a jacketed vessel with an inert gas such as nitrogen, whereby the gas is occluded in the particles of charcoal without changing the size of the mass. The material is vulcanized under pressure and subsequently cooled. Pressure is then reduced and the material is again heated, liberating the occluded gas from the charcoal, causing the mass to swell and assume a cellular structure.—H. K. Fulton, 220 Shady avenue, Pittsburgh, Pennsylvania. British patent No. 185,477.

PUNCTURE SEALING COMPOSITION. A composition for automatically sealing punctures in tires consists of a mixture of a substance having a base of cellulose, a basic solution, and a weak acid, to which may be added asbestos, Kieselguhr, antiseptic and coloring matters.—J. Houdry et Fils, 1 Avenue de Villars, Paris, France. British patent No. 187,594. Not yet accepted.

CONDENSATION PRODUCTS FROM FORMALDEHYDE AND UREA.—A. Crémer, 96 Rue Tranchée, Verviers, Belgium. British patent No. 187,607. Not yet accepted.

SYNTHETIC RESINS.—Consortium für Elektrochemische Industrie Ges., 20 Zielstattstrasse, Munich, Germany.—British patent No. 187,619. Not yet accepted.

New Zealand

SEALING COMPOSITION. The invention is characterized in its broader aspect by the use of a water emulsion of rubber which occurs naturally as rubber latex as a sealing composition for the seams of tin or other containers.—General Rubber Co., 1790 Broadway, New York, N. Y. Dewey & Almy Chemical Co., North Cambridge, Massachusetts, assignees of Bradley Dewey, 29 Raymond street, Cambridge, Massachusetts, and Ernest Hopkinson, 1790 Broadway, New York, N. Y. New Zealand patent No. 48,698.

GRANULATED MINERAL RUBBER

Ground mineral rubber is rapidly coming into favor owing to the convenience with which it can be handled in weighing out the batches and its ready absorption into the gum on the mill rolls. Some large rubber manufacturers have found it advantageous to install grinding machinery to pulverize solid mineral rubber in their own plants. To extend the advantages of ground mineral rubber to smaller rubber manufacturers, producers of mineral rubber are now offering the material in ground form. It presents the appearance of coarse lampblack and comes packed in sugar barrels lined with extensible paper bags.

Diphenylguanidine Patent Upheld

IN THE United States District Court for the Southern District of New York, suit of Dovan Chemical Co., Inc., plaintiff, against National, Aniline & Chemical Co., Inc., defendant, Judge Manton rendered decision in favor of the plaintiff, January 24, 1923.

Abstract of Opinion

The opinion of the judge as recorded is given below in abstract.

Patent No. 1,411,231 was applied for November 12, 1921, and granted March 28, 1922, and is for vulcanization accelerators. It is a process for improving rubber compounds so that the finished product shall be of superior quality and so that the time required for vulcanization shall be greatly reduced over that ordinarily required for such purposes. In the art, when certain organic substances are added to rubber mix during the compounding, a catalytic or similar action is produced which causes the rubber or gum to unite or react more rapidly or thoroughly with sulphur or other vulcanizing agents. The inventor, Morris L. Weiss, discloses that diphenylguanidine is particularly effective for this purpose.

The diphenylguanidine not only hastens the vulcanization but results in a final product much superior in texture, durability, and aging qualities over that when triphenylguanidine is used. A greatly improved product results, particularly as regards elasticity, aging qualities, and a freedom from bloom. The method of carrying out the invention is illustrated as follows: The rubber may be compounded in proportions of 50 parts by weight of new rubber, 45.5 parts by weight of zinc oxide, 3.5 parts by weight of sulphur, 1 part by weight of diphenylguanidine. They are mixed together in a suitable way, such as by milling, and then vulcanized or cured in molds under heat corresponding to steam pressure of about forty pounds per square inch. This vulcanizing temperature is continued until the compound is suitably vulcanized, which requires from ten to twenty minutes, depending upon the shape and size of the article being vulcanized. This accelerator is useful and valuable where it is desired to produce a harder or less elastic portion in an article, leaving other parts which are required to be more elastic and flexible, such as automobile tires.

It is urged by the defendant that others, prior to Weiss, tested diphenylguanidine as an accelerator. George D. Kratz read a paper in September, 1919, at a meeting of the Chemical Society of Philadelphia, in which diphenylguanidine was referred to as an accelerator. A mere reading of the paper before this society is not a statutory publication.

There was a complete publication by Kratz and others in the *Journal of Industrial & Engineering Chemistry* for April, 1920, and the application for the patent in suit was filed November 12, 1921. This publication was less than two years prior to the filing of the first Weiss application, which was on July 2, 1921. That paper refers to diphenylguanidine as being an accelerator, but it was Weiss who was the first one to adequately test by actual experience and to overcome the practical difficulties there were in the way of the accomplishment.

The Weiss tests recorded in the spring of 1918 were before the reading of the Kratz paper, and demonstrate that Weiss had been working on the production of diphenylguanidine in commercial quantities.

Kratz is said to have disclosed his idea to others in 1916. It is said that then he experimented and reached definite conclusions as to diphenylguanidine while working for the Norwalk Rubber Co., and that what he did at the Norwalk company constituted a reduction to practice as also the occasion of making the tubes for the Falls Rubber Co., in 1917. He says, speaking of his work at Norwalk under date of November 1, 1916, that it gives the relative accelerating values of certain substances tested. But what he did appears to have been a laboratory experiment which was abandoned, because nothing further was done until the later effort at reduction when employed by the Falls Rubber Co., where the tubes above referred to were manufactured. There thirty grams of diphenylguanidine were mixed with rubber stock made into inner tubes for automobiles, and such tubes were sold as blemished rubber, in Akron, Ohio. No further commercial use was made. The amount of acceleration used could have had no substantial effect in curing of the rubber as compared with that used in plaintiff's process. The burden of proof is upon the defendant to establish the defense of prior public use. When the application was in the patent office, the Kratz paper was referred to, as were his experiments, and a hearing was had there. I think the issuance of the letters patent carried with it the presumption of validity, and, in view of the defense offered here, should be established beyond every reasonable doubt.

Mere vague and general representations will not support such a defense, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the invention and to carry it into practical use. Whatever may be the particular circumstances under which the publication takes place, the account published, to be and in effect to support such a defense, must be an account of a complete and operative invention capable of being put into practical operation.

I am satisfied that the use of diphenylguanidine, as in the plaintiff's process, involved invention. Using it advanced the art of rubber making. Its utility and the consequences which followed fully support the real practical test of the sufficiency of an invention. Where the utility is proved to exist in any degree, a sufficiency of invention to support the patent must be presumed. This substitution involved a new process of manufacture to develop a new use of the properties of diphenylguanidine and there was a new and useful result obtained.

A complete and successful invention should not be voided by proof of a number of incomplete and imperfect experiments made by others at an earlier date. Even though the experimenters may have had the idea of the invention and may have made partially successful efforts to embody it in a practical form, there is not sufficient to defeat an issued patent. This applies in cases arising under patents for chemical products. An invention to be patentable should be complete and capable of producing the result, and one who has been successful in his effort should not be deprived of the consequences of that success merely because someone came near it theretofore.

I think Weiss is the discoverer of the process which has borne such good results; that the plaintiff, as assignee, should be accorded the benefits thereof. Decree for plaintiff.

RUTHERFORD PRESIDENT M. & A. M. A.

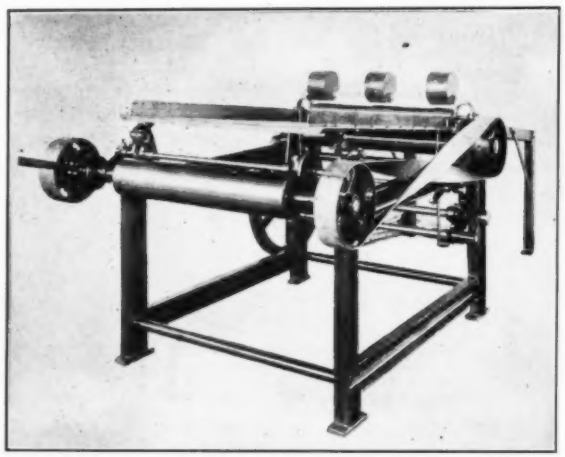
Of interest to the rubber industry is the fact that W. O. Rutherford, vice-president of The B. F. Goodrich Co., Akron, Ohio, has been recently elected president of the Motor & Accessory Manufacturers' Association, having served for a number of years as vice-president and director. He succeeds E. H. Broadwell, vice-president and general manager of the Fisk Rubber Co., Chicopee Falls, Massachusetts, who has for two years acted as president of the association, and will still continue to hold his place on the organization's board of directors.

New Machines and Appliances

Automatic Trimming and Wrapping Machine

THE illustration represents an improved automatic trimming and wrapping machine for trimming square, and to a given length, the ends of uncured tubing, steam, air, and signal hose. It will also straight wrap any diameter from 11/16 to 5¼ inches up to 30 inches in length and eject the tubing at the rate of six per minute into the storage chute ready for curing. The wrapped goods will all come out alike because the wrapping operation is automatic. The machine is adapted for use with jar ring and washer cutting machines, and for many additional uses.

The illustration shows the machine as viewed from the operator's end. The poled tubing is rotated forward by the roller against the adjustable disk knives at either end of the shaft located a little above and beyond the roller. After removing the trim the wrapping is effected by placing the pole on wet sheeting which lies spread out on the inclined tray. The work rolls by gravity down the incline against stop pins which are mechanically controlled in order to admit the tubing between the



Black Rock Tubing Trimmer and Wrapper

three wrapping rolls, the action of which in smoothing and tightening the wrapper about the work is well known.—The Black Rock Manufacturing Co., Bridgeport, Connecticut.

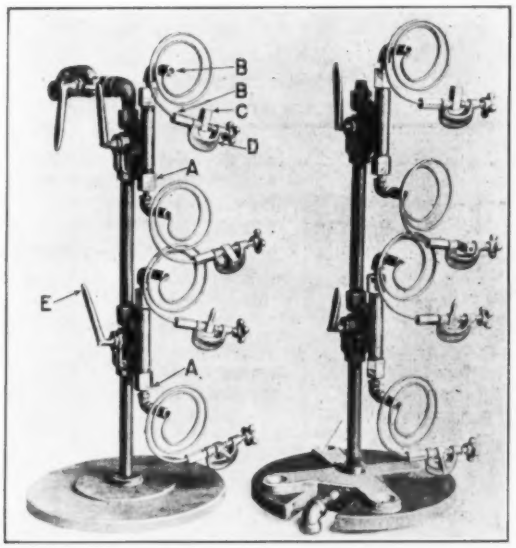
Heater Connections for Cord Tires

Reliable heater connections are essential for the continuous pressure airbag system of tire curing. A dependable device of this sort is here pictured; the left view shows arrangement for top connections and the right view that for bottom connections. Any number of units may be added.

The connection between the vertical pipe and the spiral copper tube or "pig tail" is made at A by a self-adjusting ball joint with lead and brass seats. The wear in this joint is taken up automatically by the live steam pressure. The ball joint also gives the pig tail free vertical movement in addition to its own radial movement.

The connections B are made by cone flared joints held by very long nuts, thus preventing excessive bending of the tubing and eliminating a troublesome rigid connection. The adaptor C always remains on the valve stem, the connection being made through the clamp D. There is no possibility of twisting the valve stem in the airbag when making connections.

This method not only overcomes the most common cause of leaks in airbags but it permits the standard inner tube valve



De Mattia Airbag Connections

stems in place of special types made for airbags only. The connection of one double unit to the next is made almost instantly by a half turn of cam lever E. The joints are of ball type, with the seat fully and constantly protected.—De Mattia Bros., Garfield, New Jersey.

Pneumatic Tire Testing Machine

A new machine for testing automobile tires has been developed by the Bureau of Standards, Washington, D. C., and is here shown.

The tires are mounted, free to revolve on movable carriages and pressed against the drums with the desired loads by means

Bureau of Standards Tire Tester

of weights acting through bell crank levers. The drums, each being operated through a clutch, are driven at a surface speed of 30 m. p. h. Each drum has six cleats across its face so that

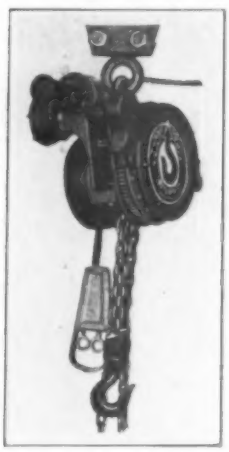
the tire is subjected to bumps in addition to the deformations due to rolling. There is a speedometer on each drum which indicates the distance travelled.

The machine is not designed to test the treads, and there is very little tread wear. Failure usually results from ply or tread separation—tread separation being the most usual cause of failure in the tests that have been run to date.

It is hoped that by means of these tests there may be established a more satisfactory basis for government purchases, and also that data of value to the tire manufacturer and user may be obtained.

Motor Driven Chain Hoist

The illustration represents an electrically operated material handling device which has been developed for operations lying between the hand chain hoist and the travelling hoist.



Motorbloc Chain Hoist

It consists of a standardized chain hoist with a self-contained electrifying unit to which the pendant controller is attached. This rugged mechanism has been developed for the electrification of the standard spur geared chain hoist in capacities from ¼ to 10 tons, proportioned to withstand severe overloads and abuse to which portable apparatus of this character is subjected by common labor.

The self-contained pendant controller is easily operated by the fingers of one hand, leaving the other hand free to guide the load. This arrangement makes it possible for one man to accomplish what would otherwise require the united strength and effort of two or more men in the operation of lifting and placing the same load.—Motorbloc Corporation, Philadelphia, Pennsylvania.

Type Faces for Rubber Stamps

In the operation of making rubber stamps the type are pressed into a plaster mold composition, withdrawing the type form after the plaster has hardened, and then applying a sheet of rubber to the mold which is placed in a vulcanizer and the rubber cured.

The Ludlow Typograph

After making the plaster impression it is necessary to clean the type with a brush to remove adhering plaster. Under this treatment the sharp edges of foundry type soon wear away and the characters on the rubber stamp are not formed as clean and sharp as when made from new type.

By means of the Ludlow system of all slug composition, unlimited quantities of type faces in great variety and all sizes are rapidly and cheaply produced by a simple casting process.—The Ludlow Typograph Co., 2032 Clybourn avenue, Chicago, Illinois.

"Rubber Machinery," by Henry C. Pearson, should be in the library of every rubber company.

Electrically Heated Glue Pot

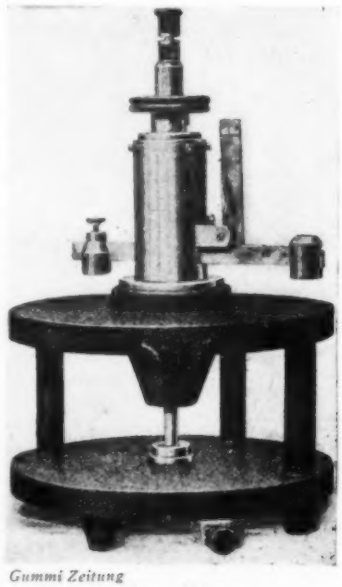
The sectional view of a new bench glue pot represents an electrically heated water bath and kettle under thermostatic control. It is thus fully automatic and requires no personal attention. It operates from any electric lighting circuit and functions either as a water bath or dry heat pot, and is adapted for heating any substance which requires a definite working temperature. The apparatus heats quickly, cannot cause fire from being left over night, and maintains heat with minimum expenditure of electricity.—J. D. Wallace & Co., 1401-1417 West Jackson Boulevard, Chicago, Illinois.

Bench Glue Pot

Testing the Dielectric Resistance of Rubber

The dielectric resistance of rubber is usually determined between plate electrodes, with the lower electrode grounded and the upper one weighted with about 100 grams and brought to high tension, the tension being increased until the rubber plate is pierced.

In repeated tests with the same and different kinds of rubber the results show considerable deviations. The cause of these varying piercing tensions is partly due to unhomogeneous material, and partly to the testing method itself. As various kinds of rubber have different degrees of elasticity and softness, the upper electrode, by its own weight, presses into the rubber test pieces unequally. The piercing tension is obtained for a thickness not determined during the test, thus the results are not comparable as the thickness at which the piercing takes place is unknown.



Gummi Zeitung

Planer Tester

These disadvantages are eliminated by the apparatus of Dr. Planer for testing the electrical piercing resistance of rubber, paper, etc., as shown herewith. This apparatus not only measures the thickness of the sample during a piercing test, but also the pressure of the upper electrode on the piece while the test is in progress.

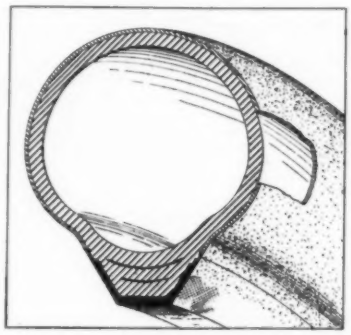
The apparatus has two electrodes, one above the other. The lower one is stationary and grounded, while the upper one is movable vertically. Between these electrodes the test piece is placed and the thickness of the piece can be read from the micrometer-screw on the top of the instrument.

The pressure of the upper electrode on the sample during the test can be determined by the balance beam of the upper electrode by setting the pointer on zero. The instrument also permits of various samples at the same electrode pressure.

Machinery Patents

Curing Bag for Cord Tires

The object of this patent is the production of an annular expansible core for vulcanizing pneumatic cord tires and to increase their durability by delaying the migration of an excess of sulphur into the walls of the bag.



Air or Water Bag

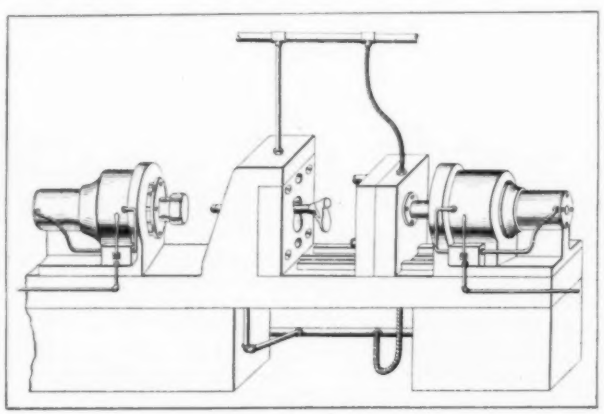
The main body is a thick-walled tube of vulcanized soft rubber, having at its inner periphery a bead base portion of vulcanized rubber reinforced with strips of fabric.

The outer surface of the tube, except the base, is covered with a layer of rubber containing very little or no sulphur. It may be pure rubber sheet or a coating of rubber cement and is dusted over with powered mica to prevent adhesion to the inner surface of the tire. In practice a new coat of mixed mica and cement is applied before each cure.

When the outer surface of the bag becomes overcured it may be buffed off and renewed with a new layer and the bag again used for many cures.—Allan B. Merrill, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y., United States patent No. 1,435,970.

Press for Vulcanizing Rubber Shoes

The press for vulcanizing rubber shoes here shown in perspective is designed to carry out in one operation the processes of shaping, forming, and vulcanizing. This is effected by the use of a special two-part mold which has one cavity accurately fitted to the upper of the shoe, while the other cavity is fitted to the



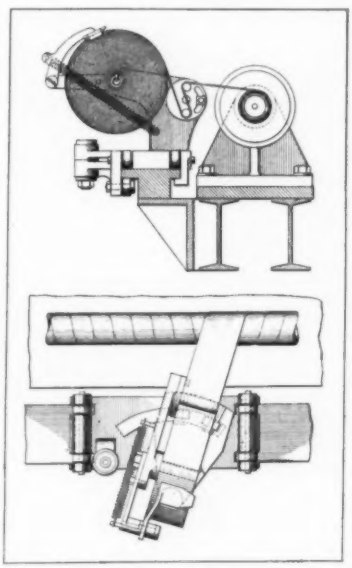
Rubber Shoe Press Vulcanizer

sole. The core of the mold or last is fitted to the interior of the rubber shoe.

In operation small pieces of rubber, backed with lining and inner sole, are placed upon the top and bottom of the last, and when the mold is closed the rubber flows under pressure into all parts of the mold and is vulcanized.

The molds are heated by steam; they are closed upon the last to form the shoe by hydraulically actuated mechanism, and opened for removal of the cured shoe by similar action of a hydraulic ejector.—Peter J. Klein and Edward Kenny, of Naugatuck, Connecticut. United States patent No. 1,432,469.

Tube Wrapping Machine



Inner Tube Wrapper

The essential features of a special tube wrapping machine are herewith shown in plan and side elevation. The object is to secure uniform, smooth wrapping of inner tubes on straight mandrels as revolved in the usual type of tube wrapping lathe.

The apparatus comprises a carriage movable along the bed of the lathe and carrying the reel of wrapping strip, the tension of which as it passes to the mandrel, is regulated by friction over a pair of rollers supported on the face of a disk, adjustable to the desired tension.—W. C. Stevens, assignor to The Firestone Tire & Rubber Co., Akron, Ohio, United States patent No. 1,435,091.

Other Machinery Patents

The United States

1,437,433 Tire mold. J. S. McClurg, New York, N. Y., assignor, by mesne assignments, to Carlisle Tire Corporation, a Delaware corporation.

1,437,628 Method of making tire rims. E. H. Wulff, Toledo, Ohio.

1,437,725 Mold. F. H. Criner, Seville, Ohio.

1,438,156 Tire building machine. H. M. Brown, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,438,158 Stitcher roll. W. B. Harsel, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,438,159 Mold cutting mechanism. W. B. Harsel, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,438,160 Tire mold. W. C. State, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,438,231 Extruding solid tires. D. E. Goodenberger, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.

1,438,245 Rubber sole mold. R. F. Knight, Beverly, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J.

1,438,464 Tube deflating machine. M. C. Schweinert, West Hoboken, N. J.

1,438,509 Tube deflator. O. A. Walker, Charleston, W. Va.

1,438,930 Device for removing cores. T. Midgley, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls—both in Mass.

1,438,962 Boot or shoe tree. F. J. MacDonald, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,439,197 Method and apparatus for making vehicle wheel tires. J. H. Smith, Jr., Passaic, N. J.

1,439,221 Inner tube. F. E. Bessler, Akron, Ohio.

1,439,387 Paper wrapping machine. W. M. Wehildon, Ashland, assignor to E. H. Angier, Framingham—both in Mass.

1,439,544 Guard for rubber mills. L. Gaisman, Woodley, Stockport, England.

1,439,774 Tire repair tool. A. R. Wert, North Yakima, Wash.

1,439,794 Machine for applying foxing to rubber shoes. L. A. Casgrain, Beverly, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J.

1,439,895 Expansible core. A. Huetter, assignor to The Allsteel Ridewell Tire & Rubber Co.—both of Dayton, Ohio.

1,440,007 Machine for extruding plastic materials. S. Freeman and R. O'Toole, Hammersmith, London, England.

The Dominion of Canada

226,155 Tire building machine. W. H. Herman, Columbus, Ohio, U. S. A.

226,249 Tire core stripper. The Goodyear Tire & Rubber Co., assignee of W. M. Metzler—both of Akron, Ohio, U. S. A.

226,250 Apparatus for building up plies of plastic materials. The Goodyear Tire & Rubber Co., Akron, Ohio, assignee of F. A. Steele, Los Angeles, Calif.—both in the U. S. A.

226,254 Tire changer. The A. B. Jardine Co., assignee of A. Jardine—both of Hespeler, Ontario.

226,463 Molding and vulcanizing apparatus. The Dunlop Rubber Co., Limited, Regents Park, London, assignee of C. Macbeth, Birmingham, Warwick—both in England.

226,603 Die molding machine for plastic material. La Société anonyme des Etablissements A. Olier, assignee of A. Olier—both of Clermont-Ferrand, Puy de Dome, France.

226,874 Tire bead building machine. H. D. Stevens, Akron, Ohio, U. S. A.

The United Kingdom

187,089 Alloy for molds. British Thomson-Houston Co., Limited, 83 Cannon street, London; General Electric Co., Schenectady, New York, U. S. A.

187,143 Knitting needle. E. Hymans, 3 Meredith street, Clerkenwell, London.

188,304 Rubber mold. A. L. Schaveir, Stamford, Conn., U. S. A. (Not yet accepted.)

188,396 Tube vulcanizer. W. L. Fairchild, Times Building, New York City, U. S. A.

188,463 Molding india rubber. F. C. Jones, 212 Upper Thames street, London.

Germany

Patents Issued, with Dates of Issue

368,361 (March 21, 1920) Vulcanizing apparatus. Harvey Frost & Co., Ltd., London; represented by: H. Licht, Berlin, S. W. 11.

368,597 (October 16, 1920) Rubber washing machine. B. W. Wittenberg, Potsdamerstrasse 5, Berlin.

368,598 (October 16, 1920) Rubber mixer. B. W. Wittenberg, Potsdamerstrasse 5, Berlin.

368,599 (July 1, 1920) Press for making hollow articles, particularly of rubber. Paramount Rubber Consolidated, Inc., Philadelphia; represented by: Dr. Bloch, Berlin, N. W. 21.

Design Patents Issued, with Dates of Issue

832,606 (November 11, 1922) Stuffing-box packing ring. Hermann Langer, Löschstrasse 12, Gleiwitz.

Process Patents

The United States

1,437,859 Manufacture of cord tires. W. O'Neil, assignor to The General Tire & Rubber Co.—both of Akron, Ohio.

1,437,870 Method of making tire cord. J. A. Swinehart, Akron, Ohio.

1,438,019 Method of making synthetic chicle compound. L. W. Buckley, West Somerville, assignor to The Goudey Gum Co., Boston—both in Mass. (Substitute for application Serial No. 277,220.)

The Dominion of Canada

226,184 Wire protected tire. M. P. Mitchell, Eaton, Ohio, U. S. A.

226,251 Method of curing hose. The Goodyear Tire & Rubber Co., assignee of E. G. Kimmich—both of Akron, Ohio, U. S. A.

226,496 Method of vulcanizing rubber. W. M. MacIntosh, Akron, Ohio, U. S. A., assignee of H. H. Hastings, assignee of S. MacIntosh—both of Toronto, Ontario.

226,536 Treating fibrous material with rubber latex. E. Hopkinson, New York City, U. S. A.

The United Kingdom

187,149 Wheel tires. Dunlop Rubber Co., Limited, 1 Albany street, Regents Park, London, and C. Macbeth, Fort Dunlop, Erdington, Birmingham.

187,327 Woven fabrics, etc. C. H. R. Woodward, 42 Broadway, New York City, U. S. A.

188,321 Cord tire construction. Norwalk Tire & Rubber Co., Norwalk, assignee of F. B. Converse, Westport—both in Conn., U. S. A. (Not yet accepted.)

188,413 Ornamenting india rubber. L. Minton, Trevelyan Buildings, Corporation street, Manchester.

188,563 Self sealing tube. H. C. Privett, 441 Citizens National Bank Bldg., 457 South Spring street, Los Angeles, Calif., U. S. A.

New Zealand

48,693 Wire protected tire. The Wire Cord Co., 41 East Mill street, Akron, Ohio, assignee of D. M. Weigel, 309 East Fall street, Newcastle, Pa.—both in the U. S. A.

The Elasto-Durometer[1]

The elasto-durometer instrument of Pierre Breuil comprises a base carrying a short column on which can be shifted a guide provided with a special plate through which is a threaded hole for receiving either the apparatus for measuring rebound effect or determining hardness.

Elasticity Tests

The instrument arranged for a test of elasticity is illustrated in Fig. 1.

A transparent glass or celluloid tube is supported as shown. In the top of this tube is an iris diaphragm which opens from three to 15 mm. in diameter. The tube is plumbed by means of the screws and a spirit level. The test piece is compressed under the adjustable plate carrying the tube. A steel ball placed on the iris diaphragm at the top of the tube is allowed to drop onto the sample below by opening the iris. The height to which the ball rebounds from the sample is read from the graduations on the tube. The thickness of the sample for test may be as much as 50 mm. With this apparatus all kinds of materials may be tested which afford a plain surface for testing. The results are concordant.

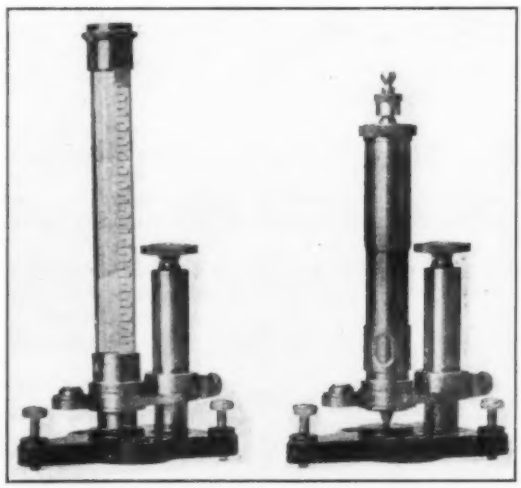


FIG. 1—TESTING ELASTICITY FIG. 2—TESTING HARDNESS

Pierre Breuil Elasto-Durometer

Hardness Tests

The instrument as arranged for making tests of hardness is illustrated in Fig. 2. The transparent tube seen in Fig. 1 is replaced by one of metal containing a rod with conical test point at the lower end and a screw washer at the top to hold the rod in place. Within the tube is a calibrated, open, spiral spring, compressible between the lower shouldered end of the rod and an adjustable bearing block located in a sleeve threaded on the outside of the main tube. In the lower end of the tube is an opening through which a vernier scale is read when the test is made. To make a hardness test on the sample the tube-holder plate is adjusted to bring the point in contact with the sample, and the sleeve is turned on the tube. The penetration of the test point is read from the vernier scale and the force required to effect any given penetration is read from a table of values corresponding to the calibrated spring used.

[1]Le Caoutchouc et la Gutta-Percha, October 15, 1921.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients," also "Rubber Machinery."

The Editor's Book Table

Book Reviews

"RUBBER ASSOCIATION ACTIVITIES DURING 1922." PUBLISHED by the Rubber Association of America, Inc., New York, N. Y. Paper, 18 pages, 7 by 10 inches.

In this summing-up of the association's activities the statement is made in an introductory paragraph by A. L. Viles, the general manager, that no attempt has been made by the compilers to go into explicit detail, the work of the organization being, it is believed, more or less familiar to the various members. Items mentioned, however, as worthy of special notice are grouped under such headings as: "Matters Connected with Merchandising Conditions," "Matters Connected with Manufacturing Conditions," "Foreign Trade," "Legislation," "Cooperation with other Organizations," "New Committees and Divisions," "Accounting," "Statistics," "Other Activities," and "Traffic." The Automobile Fabric Manufacturers' Division and the Bathing-Cap Manufacturers' Committee should be also noted as among the subsidiary departments recently formed in order to meet certain specific problems.

"RUBBER—ITS HISTORY AND DEVELOPMENT." PUBLISHED BY The Firestone Tire & Rubber Co., Akron, Ohio. Foreword by Harvey S. Firestone, president of Firestone organization. Cloth, 145 pages, 10 by 13 inches, illustrated.

In this unusual and well-printed volume there has been set forth by means of a series of excellent photographs the whole story of rubber, from the gathering of the latex on the plantations to the final inspection of the completed rubber tire at the factory. More than fifty large photographs convey to the uninitiated much information regarding the subject, while five brief introductory chapters tell of the discovery of rubber and the rapid development in recent years of this important industry. Although written in a somewhat popular style, this volume is intended for use in universities in connection with courses devoted to highway transport engineering. Issued in September, 1922, the book represents a revision of one prepared a few months earlier.

"PROCEEDINGS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS, Twenty-fifth Annual Meeting," Parts I and II. Cloth, illustrated and indexed, 5¾ by 9 inches. Part I, 1,023. Part II, 591, 1922. Philadelphia, Pennsylvania, American Society Testing Materials.

Part I contains summary of the proceedings of the twenty-fifth annual meeting of the society, the annual address by the president, committee reports and tentative standards.

Part II contains numerous technical papers grouped under the topics: "Impact Testing of Materials," "Metals," "Concrete and Road Materials," "Paints and Oils," and "Miscellaneous Materials."

"HENDRICKS' COMMERCIAL REGISTER OF THE UNITED STATES for Buyers and Sellers." Thirty-first Annual Edition. S. E. Hendricks Co., Inc., New York, N. Y. Cloth, 2,321 pages, 8½ by 11½ inches.

The new 1923 edition of this very useful book of reference contains 125,000 changes and additions, thus making previous work thoroughly up to date. For example, some new industries, such as the radio trades, are itemized and carefully compiled, while many old classifications have been thoroughly revised and regrouped. In all, over 18,000 products are separately listed, with the name and address following of every manufacturer or producer, together with the trade name or brand (if any), and also essential facts regarding many of these products. By means of an excellent system of indexing and cross-indexing these various items can be found without difficulty. An alphabetical list of trade names, as well as manufacturers, is a concluding and important feature.

A monthly commercial bulletin and an information bureau also form part of the Hendricks' Information Service, which aims to supply subscribers with useful data.

Abstracts of Recent Rubber Articles

Hydrogenation of Caoutchouc and Its Constitution. Hydrocaoutchouc is unattacked by vulcanizing agents. This supports the view that the vulcanization of rubber is a purely chemical process due to combination of the vulcanizing substance with the rubber at the double bonds, and not an absorption phenomenon.—H. Staudinger and J. Fritsche.—*Helvetica Chimica Acta*, 1922, 5, 785-806.

Experiments to Preserve Rubber Latex. Among the most satisfactory substances for preserving latex uncoagulated are ammonia; sodium silico-fluoride in conjunction with caustic soda; sodium fluoride; agrisol in solution with caustic soda; and caustic soda alone. Ammonia has the advantage of volatility, and is lost in process of recovering the rubber from the latex. Caustic soda will probably be found more effective, weight for weight, is considerably cheaper and being non-volatile and easily soluble in water would be easier to handle.

Where rubber free from alkaline ingredient is desired ammonia preserved latex may be preferred in spite of greater cost.

For the majority of purposes, particularly where the latex is coagulated or precipitated by acid substances, as in paper making, the caustic soda preserved latex will be just as good as the ammonia preserved. Both these preservatives have the advantage that they are colorless and do not affect the color of the latex, as do the coal tar products.—H. P. Stevens, *The Bulletin of the Rubber Growers' Association*, September, 1922, 457.

Influence of Soil Upkeep on Latex and Rubber. No improvement was observable in the rubber from trees over a period of three months during which the ground was kept in good condition and free from weeds, after having been neglected for twelve months. —O. de Vries, *Communication Central Rubber Station*, 1922, No. 31, 289-295.

Transmission of Heat Through Rubber. Comparative tests made at the National Physical Laboratory, London, on the thermal conductivity of the porous rubber Onazote in comparison with cork, wool, charcoal and an asphalt-fullers earth composition showed that Onazote has a lower conductivity than any of the others.—A. Luttringer, *Le Caoutchouc & La Gutta-Percha*, 1922, 11307-

Pigments Used in the Rubber Industry. Review of the properties of the following pigments used in the rubber industry, potassium cobalt nitrite, chromium greens, cadmium yellow, zinc chromate, ultramarine, molybdenum blue, cobalt blue, red iron pigments, blacks, ochres, and siennas.—A. Hutin, *Rev. Prod. Chim.*, 25, 541-545.

Plantation Rubber From the Point of View of the Manufacturer. A summary of the views of British manufacturers on the merits and defects of plantation rubber compared with fine Pará. Opinion favors fine Pará for fine goods and cements because Pará has greater freedom from mechanical impurities and certain favorable "grain" characteristics. Emphasis is also laid on hardness and massing, variability in milling properties which cannot be detected in advance by viscosity measurements and on the presence of impurities such as sodium chloride or sodium bisulphite which are detrimental in electrical uses on account of increased conductivity.—B. D. Porritt, *The India-Rubber Journal*, 1922, 64, 421-422.

Aging of Rubber Prepared with Sodium Silico-Fluoride. The conclusion is drawn that the sodium silico-fluoride specimens age at least as well as acetic acid coagulated, and the use of excessive amount of sodium silico-fluoride does not accelerate the effect of aging.—H. P. Stevens, *The Bulletin of the Rubber Growers' Association*, Vol. 4, December, 1922, 662-664.

Kolloidchemie and Kautschuk. Review of the colloid chemistry of rubber latex, crude rubber, vulcanization and reclaiming of rubber.—R. Weil, *Kolloid-Zeitschrift*, November, 1922, 303-308.

Stearic Acid in Latex from Ficus fulva. Of the coagulated latex only 7.7 per cent was insoluble in alcohol. The alcoholic extract when cooled deposited wax with melting point 52 to 58 degrees C., which on saponification gave potassium stearate and phytosterol. The wax is not identical with that from Ficus elastica.—A. J. Ultée, *Bulletin Jardin Botan.*, Buitenzorg, 1922, 5, 105 to 106.

Temperature Coefficient of Insulation Resistance of Rubber Covered Wire. The temperature coefficient of insulation was investigated for wire, with rubber content of 40 per cent and 20 per cent, from eight Japanese manufacturers. The results showed that the temperature coefficient of insulation resistance of the rubber-covered wire not only increases as the rubber content decreases but has also a tendency to increase in nearly proportional relation with the amount of organic substances in rubber compound extracted by various solvents, and that the degree of vulcanization has almost no influence upon the temperature coefficient.—*Researches of the Electrotechnical Laboratory*, Tokyo, Japan.

Transformations in Rubber Goods by Sulphuric Acid. Review of the work of Harries and others.—Dr. Fr. Kirchhof, *Gummi-Zeitung*, November 24, 1922, 100.

Empirical and Structural Composition of Natural and Synthetic Caoutchouc. A critical study of the subject. F. Kirchhof. *Kolloidchemische Beihefte*, Vol. 16, Part 1-4, 47.

Holiday Greetings, Calendars, Souvenirs

Calendars

The Akron Rubber Mold & Machine Co., Akron, Ohio, has forwarded a large calendar printed in two colors, the several leaves headed with representations of both the exterior and interior of the company's factory and foundry.

From The North British Rubber Co., Limited, Castle Mills, Edinburgh, Scotland, comes a large and attractive calendar, in poster style, the small attached leaves so arranged as to be of use as a diary.

The American Zinc Sales Co., Columbus, Ohio, a subsidiary of The American Zinc, Lead & Smelting Co., has sent a substantial and attractive calendar, printed in red and black.

A large and striking calendar, issued by The Link-Belt Co., Chicago, Illinois, is printed in two colors, while each of its twelve leaves contains as a heading a photographic reproduction with descriptive caption of some of the company's most important products.

The Cooper Hewitt Electric Co., Hoboken, New Jersey, has prepared an attractive calendar, printed in green and black on a white ground, while on each leaf are representations of some of the company's electric installations at various important plants.

A large calendar, representing an old mill, the seventeenth in a series depicting early American constructions, has been issued by the Stedman Products Co., South Braintree, Massachussetts, manufacturer of Stedman naturized reinforced rubber flooring.

From The Adamson Machine Co., manufacturer of rubber machinery, Akron, Ohio, comes a large and beautiful calendar, its main feature being a reproduction of a painting entitled "Sentinels of the Pacific."

Another calendar, also in color, representing a landscape with a young girl in the foreground, is a souvenir from The Oak Rubber Co., rubber toy balloon manufacturers, Ravenna, Ohio.

Still another art calendar, in this instance representing a camping scene, has been sent by Charles E. Wood, crude rubber broker, 287 Broadway, New York, N. Y.

A handy and useful calendar pad has been sent us by The New Jersey Rubber Co., rubber reclaimers, Lambertville, New Jersey.

Cards and Souvenirs

John Royle & Sons, Paterson, New Jersey, makers of special rubber machinery, send a useful memorandum book, attractively bound in dark leather.

A combination desk pad and calendar, enclosed in a handsome brass case, is the gift of The Marlboro Cotton Mills, tire fabric manufacturers at McColl, South Carolina.

The Akron Equipment Co., Akron, Ohio, sends, with its Christmas card, a handsome letter case of soft gray leather.

A "Redipoint" pencil comes as an attractive and useful gift from The Clapp Rubber Co., rubber reclaimers, Boston, Massachusetts.

E. M. & F. Waldo, Inc., 11 Broadway, New York, N. Y., specialists in pigments and dry colors, have sent a compact little atlas, which contains maps of every country in the world.

DeMattia Bros., manufacturers of tire mold equipment, Garfield, New Jersey, are sending to their patrons and friends unique ash trays in the shape of small rubber tires.

Appreciative acknowledgment is also made of the attractive Christmas and New Year cards received, which express the good wishes of the following: The Akron Rubber Mold & Machine Co., Akron, Ohio; The E. H. Clapp Rubber Co., Boston, Massachusetts; T. C. Ashley & Co., Boston, Massachusetts; The Rubber Service Laboratories Co., Inc., Akron, Ohio; The Benzine Condensation Co., New York, N. Y.; The Pequanoc Rubber Co., Butler, New Jersey; Marlboro Cotton Mills, McColl, South Carolina; Mitsui and Co., Limited, New York, N. Y.; Ames Holden McCready, Limited, Montreal, Canada; A. Schrader's Son, Inc., Brooklyn, New York; Hardwear Tire Corporation, Rutherford, New Jersey; Better Tires Corporation, Chicago, Illinois; and George K. Culp, New York, N. Y.

Our sincere thanks and best wishes for the year 1923 are extended to the various companies who have favored us with these kind remembrances.

New Trade Publications

AS A PART OF AN EXTENSIVE SALES CAMPAIGN WHICH WILL LAST from January 2 to February 20, 1923, The Faultless Rubber Co., Ashland, Ohio, is sending out posters, various window display signs and illustrated price lists, in order to advertise its "Wear-ever" goods. These include druggists' rubber sundries and specialties, and unusual inducements are being offered to cooperating dealers.

LARGE AND STRIKING POSTERS AND BROADSIDES, AS WELL AS COLored signs for wall and window displays, effective mailing folders, business cards, etc., were used in an extensive advertising campaign recently carried forward by The F. E. Partridge Rubber Co., Limited, Guelph, Ontario, Canada. While in this campaign particular stress was laid upon the company's tire and tube products, other manufactures placed upon the market by this organization include druggists' and stationers' rubber sundries, as well as various kinds of sporting goods. F. R. Partridge is president.

AN ILLUSTRATED BULLETIN, ENTITLED "SPRAY COOLING," HAS BEEN recently issued by The Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania, manufacturer of valves, meters, and various power plant devices. The special equipment, as described in this publication, is particularly adapted for the cooling of water for certain purposes, more especially in condensing systems.

Non-Sticking Liners for Tacky Rubber Stocks

Common Liner Practice—Dry Stock Dangers—Preservation of Repair Stocks—The Goodrich Non-Sticking Liner—Its Characteristics and Advantages

IT is a curious fact that "tack" adhesiveness of compounded rubber stocks, which is the prime requisite of good unions in practically every building operation of rubber goods manufacture, presents perhaps the most troublesome problem in handling the stocks during preparation, aging, storage, shipment and use. Great tackiness is absolutely essential in order to prevent ply separation in footwear making and particularly in tire building; yet in past years, owing to inadequate handling methods, it has involved great losses in time, labor and damaged stocks.

Difficulties in Handling Compound Gums

For many years it has been the custom to protect the slabs or sheets of compounded "green" gum stocks by laying or rolling them between liners of plain untreated sheeting. If they possess the desired "tack" the stocks will adhere more or less to the liner, requiring great strength and often special power machinery to separate them for use.

While in the storage bins, where the slabs of compound gum from the mixing mills are allowed for a time to age, a liner very often sticks to very tacky stock so tenaciously that it has to be cut loose with wet knives before the subsequent warming-up and sheeting process. Slabs and rolls piled on each other horizontally sometimes become a solid mass, due to their weight, and are separated with great difficulty.

Sticking of tire stocks to liners makes it difficult to maintain the uniform ply tension essential in tire building. Tread stocks run hot from a tubing machine into liner books are distorted from their proper form when forcibly pulled away from sticking liners. Cut boot and shoe and other stocks are often distorted from their proper shapes and measurements and ruined in removal, and the liners badly stretched and even torn. Lint and ravelings adhere to the stocks and have to be brushed off, while rubber adheres to the liners, requiring cleaning, brushing, and careful rewinding. Very tacky stocks often adhere inseparably to the liner and both have to be scrapped, at considerable loss. The life of an untreated liner is short at best and its first cost steadily advancing.

Calendering and Bias Cutting Fabrics

Frictioned fabrics present much the same difficulties in handling as sheeted gums. Run off the calender into ordinary liners in a very heated condition, the tendency to adhere is great, and re-rolling is necessary to prevent distortion of the stock. A roll of cord tire fabric averaging 250 to 300 yards weighs, when frictioned, from 1,200 to 1,400 pounds. To run this through a bias cutter requires excessive motive power, as does its subsequent application to the tire building core. In most instances probably 90 per cent of this power consumption could be eliminated by the use of non-sticking liners.

Dry Stock Dangers

Unless compound gums and frictioned fabric are somewhat dry or slightly covered with bloom they will not come out of their liners readily. To obtain just the right degree of "tack" which will answer the requirements without causing liner difficulties demands a closeness of control that is difficult to maintain, and the usual results are either considerable sticking of liners and loss of stock or too dry stock, causing ply separation in the finished products.

Preservation of Repair Stocks

Preservation of the "tack" in repair or so-called "shipping" stocks is of the utmost importance. These stocks are not subjected to rough handling as in factory work, and liners of holland or starched muslin, also of paper, are in general use. But to obviate serious sticking, these stocks are often run dryer than is desirable for their full effectiveness. The use of non-sticking liners would enable the marketing of better repair stocks in prime condition. Moreover, a non-sticking compound applied to proper cartons would prevent the deterioration due to air, light, and moisture in dental and surgical goods, balloons and other novelties, and enable dealers to maintain large stocks for long periods without loss.

The Goodrich Non-Sticking Liner

Some six or seven years ago The B. F. Goodrich Co. began to investigate the problem of non-sticking liners. Experiments disclosed an untried substance which was non-adhesive in contact with tacky rubber. This was made the base of a surface coating for liners, and a patented formula suitable for all purposes was worked out. Production of liners treated with this new coating was begun about a year and a half ago, and their use in the Goodrich plant has increased steadily, owing not only to the manufacturing economies effected but to the prolonged life of the liners themselves.

As this successful non-sticking liner eliminates all the manufacturing difficulties outlined above at a considerable saving in trouble and expense, it is coming into widespread demand throughout the industry. A Cleveland, Ohio, concern[1] has been made the exclusive licensee in the United States under this patented process and is now extensively engaged in treating liners for rubber goods manufacturers, charges being made per linear yard of fabric, according to width.

Characteristics and Advantages

The Goodrich non-sticking liner, being especially advantageous in handling book stocks, is of great assistance especially to tire and footwear manufacturers. It has no affinity for rubber, oil, or gasoline. Sulphur chloride fumes, which rot ordinary liners in the dipping process, do it no harm. It protects tacky rubber, excluding air, light, humidity, grease, and dirt, preventing oxidation, blooming, and mold and affording better resistance to the solidifying effect of heat than an unsurfaced liner. Its blue color distinguishes it from other treated liners.

Apart from the obvious economies and advantages of this non-sticking liner in facilitating the handling of tacky rubber in process of manufacture, it maintains the proper condition of the stock.

By excluding air from the rolls or books it preserves tackiness, prevents blooming, obviates recementing or gasoline application to restore tackiness. By insuring the removal of cut stocks without sticking, accurate original shapes and measurements are preserved. Rolls of raw gum or rubberized fabric wrapped in this liner may be stored horizontally, as weight has no effect in massing the material.

The surface treatment to which the liner is subjected adds strength and durability to the fabric. Its greater body serves to keep it in shape and facilitate rewinding. As cleaning is unnecessary, no brushing machine is required. The life of a non-sticking liner is several times that of an ordinary liner.

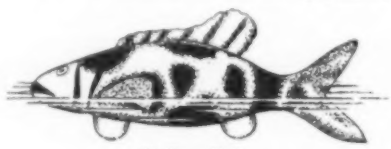
[1] The Cleveland Mixer & Manufacturing Co., Cleveland, Ohio.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

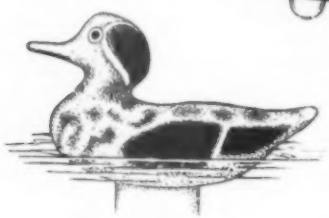
New Goods and Specialties

Rubber Toy Novelties

THE public has accepted with undoubted approval the vogue of the rubber toy novelty. In various forms and under various trade names it is making a bid for popularity and seemingly finding it. The Puffup toys illustrated here are a good example. They are handmade of heavy rubber and are colored in the natural colors of the frogs, fish, ducks and turtles which they represent. The coloring is obtained by means of rubber paint vulcanized on the body of the toy. All of these toys float and are inflatable and come in various sizes, packed in attractive lithograph cartons with all-over animal designs.—The Seamless Rubber Co., Inc., New Haven, Connecticut.



Puffup Fish



Puffup Duck

Sponge Rubber Bath Toys

One of the popular toy novelties of the season is the Pun-Gee sponge rubber doll, a bathtub toy made of pure rubber and in colors that are brilliant and which will not fade or wash off.

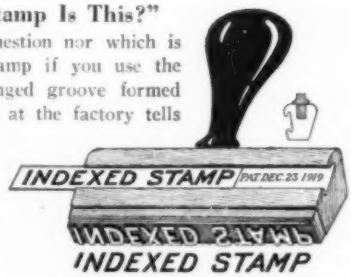
They are designed to catch the eye and have a strong consumers' appeal, as may be seen in any store window where these dolls are featured in window display. Of course they float, and water will not injure them, so that they lend themselves to very ingenious ideas in store window decoration. The two models illustrated are members of a family of seven, including Ma, Pa, Jimmie, Patsy, Polly, The Flapper and Old Black Mammy. The clothes as well as the dolls themselves are of rubber. The hair, or head ornament, whatever it may be called, of the flapper doll is of strips of smooth rubber, as also is the abbreviated skirt. The brightest of colors are employed in the mammy doll, which is brilliantly black and is decked out in red, white and blue, with touches of vivid green.—The Miller Rubber Co., Akron, Ohio.

Pun-Gee Flapper Sponge Doll

Pun-Gee Mammy

"Which Rubber Stamp Is This?"

No need to ask this question nor which is the front of a rubber stamp if you use the "Indexed Stamp." A flanged groove formed in the front of the mount at the factory tells both. It carries a slip of cardboard or paper bearing an impression of the stamp or any other label which may be preferred. —Medearis Moulding Co., Winston-Salem, North Carolina.



Medearis Grooved Stamp

Russian Rubber Boot for Women

The "Cossack" boot pictured here is one of the most practical as well as attractive models of its kind. The foot portion is entirely of rubber and the leg of waterproof material. A cuff of gray astrachan about two and one-half inches wide finishes it off at the top and is a style feature. This cuff can be turned up to give additional height to the boot if desired. The only fastening is the snap on the cuff. The white lining is another feature and one which is distinctive. Because it protects dainty hosiery and footwear from soil it makes the boot suitable for wear on various occasions. It may be pulled on over slippers or shoes for motoring, the theater, dances, as well as for tramping through slush and snow. They are light weight and are built in sizes from 2½ to 8.—The Northern Rubber Co., Limited, Guelph, Ontario.

The Cossack Boot

Gas-Tight Rubber Goggles

This new rubber goggle is designed to be worn by workmen employed where fumes, gases, and poisonous dust might affect the eyes. Its special feature is a capillary chamber, which holds water in such a way that when the wearer stoops over his work or nods or shakes his head the water is dashed across the inner faces of the glasses and cleans them and clears away all fog, insuring clear vision without removing the goggles. There are two chambers made of rubber and connected by a rubber bridge, the rubber being soft enough to form a gas-tight seat on the wearer's face. An adjustable elastic band encircles the head. A glass disk is seated in an annular groove in the outer wall of each chamber. This disk stretches the walls of the outer chamber, drawing to a conical shape the inner wall of the chamber, which is integral with it and is provided with a central sight aperture.—Harry S. Cover, South Bend, Ind.

The Clear Vision "Nod and Shake" Goggle

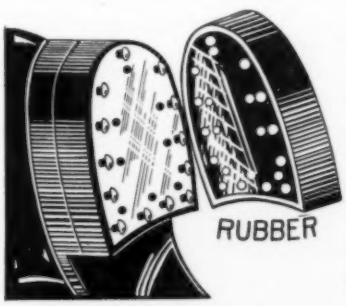
The Golfer's Rain Jacket

The finest quality of rubber fabric is employed in the construction of the golfer's rain jacket illustrated here. It can be rolled up into a parcel weighing only fifteen ounces and carried in the coat pocket or golf bag; its envelope may be worn as a cap, the flap of which drops down over the neck, thus protecting the back of the head and preventing the rain from getting in under the collar of the jacket. It is made with large armholes, and has full length sleeves and an adjustable belt, but has neither turnover collar, cuffs, nor lapels, so that it may be worn under the ordinary coat for warmth when riding, driving, motoring, fishing, etc. It is made in three sizes, small, medium and large, to fit chest measurements ranging from 34 to 46.—Glover Specialties Co., Bridgeport, Connecticut.

Golfer's Jacket of Rubber Fabric

Improved Snap-On Rubber Heel

The snap-on heel shown here is in two parts. First there is a thin metal plate into which a number of metal studs with large heads are riveted. This plate is nailed to the heel of the shoe, and the rubber heel, which has cavities provided for the purpose, is forced on over the studs in the plate. The rubber heel has nail holes which correspond to the nail holes in the metal plate, so that both can be put on by the cobbler at one time. The newest feature of this heel is the nail spacing, which fits the dies of the United Shoe Machine corporation nailing machines. The wearer of the shoe can do his own heel repairing after the metal plate has once been affixed, for the rubber heels may be changed from one shoe to the other and made to wear down evenly, and when they are finally worn out they may be replaced by snapping another pair onto the old plate. The plate will last as long as the shoe itself.—Snap-On Heel Corporation, 282 Kossuth street, Bridgeport, Connecticut.



The Snap-on Heel

An Improved Overtire

The Cummings Overtire is placed over another casing without cement or vulcanization and is designed to protect the tire from punctures, stone bruises, rim cuts, sand blisters, sun cracking, and the like. The special features of the overtire illustrated here are the sectional slots and the endless sidewall support. The slots break up transverse force tendency toward displacement, radiate heat, and expel foreign matter. The sidewall band supports the side wall of the tire when underinflated or overloaded, and protects against punctures and skidding. The overtire is designed to creep slowly on the undercasing, thereby relieving the strain on the inner tube at the valve point, distributing the wear and heat uniformly, and lessening the destructiveness of quick starts and stops.—The Phillips Rubber Co., 10 High Street, Boston, Massachusetts.

The Cummings Overtire

Air Mattress Which Holds Its Shape

The inside air section of the pneumatic mattress shown below is made of four layers of pure rubber, calendered to a high grade cotton fabric, the rubber surface being exposed so that repairs as easily made. The mattresses are cut from rubberized cloth and are vulcanized after being made up, so that all parts are welded together and joint leaks are impossible. They are tufted with a patent stay which holds the walls always in the same relative position to one another vertically, thus insuring a perfectly even surface regardless of the location of the weight. Camp mattresses are furnished with covers of khaki or brown duck. Household mattresses are covered with striped satin ticking. When deflated they may be rolled up into a conveniently handled bundle.

"Perfection" Boat Cushion

The same company makes the boat cushion illustrated. It has a life-line attached, and it is claimed that the smallest size will float the heaviest person. It may be used as seat and backrest or as two seats. When deflated it may be carried in the pocket.—Atlantic-Pacific Manufacturing Corp., 124-128 Atlantic Avenue, Brooklyn, N. Y.

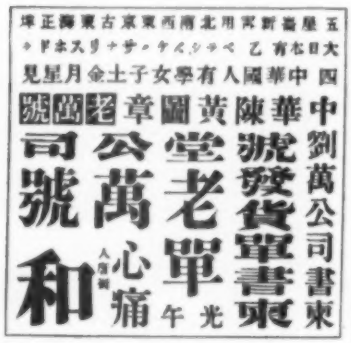
"Perfection" Pneumatic Mattress

Improved Elastic

The Laurel mercerized elastic has been improved by the use of heavier rubber and a finer quality of yarn, which adds to its recognized lasting qualities.—The Russell Manufacturing Co., Middletown, Connecticut.

Chinese Rubber Stamps

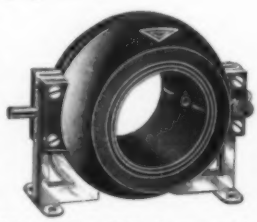
The accompanying illustration shows the Chinese characters in various styles and sizes used in constructing rubber stamps for use between China and the western world. The address is stamped on in both languages, and the stamps are made up in Chinese and English, Chinese and French, and other combinations, which should certainly lessen the number of mistakes and facilitate the work of the postal service and freight employes handling matter in transit to and from China and to and from the Chinese districts in other countries. Handles and cushion mounts are provided for the stamps if specified, and there are also self-inkers and daters to be had.—Lohmann Rubber Stamp Works, 502 Washington street, San Francisco, California.



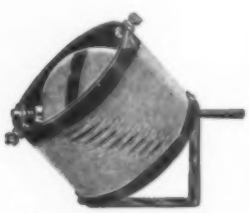
Chinese Characters for Rubber Stamps

New Radio Equipment

In the variometer shown in the accompanying illustration the rotor and stator are of hard rubber, as are the binding posts. There are no soldered connections. The hard rubber materials used are absolutely unshrinkable. In this type of variometer there is a minimum clearance between the rotor and the stator, as the shape of the stator conforms with that of the rotor, thus utilizing minimum space on the panel board. It is mounted on nickel plated legs. In the vario-coupler illustrated, fiber tubing, a non-shrinkable hard rubber rotor, nickel-plated hardware, and the best grade of green-covered copper wire enter into the construction. There is a specially constructed spring which is designed to maintain absolute stability of the rotor within the tube. All details of installation are as simple as it is possible for them to be made, without lowering the high standard of efficiency of operation.—Utility Electrical Products Co., 4550 Congress street, Chicago, Ill.



Mirror Brand Variometer 1A



Mirror Vario-coupler 2-A

Swimming Caps an All-Year Commodity

The B. F. Goodrich Co. is featuring a new line of bathing caps to supply to swimming pools of athletic and other clubs and Associations. Dealers handling bathing caps usually shelve this line during the winter months, but this company believes there is a good winter market for them. The Goodrich Sea-caps are watertight and are made in four styles: one for men, which does not cover the ears; one for men or women, which does cover the ears; one with strap under chin and providing ample space for hair or unusually large heads, and one with chin strap, intended for small heads and bobbed hair.—The B. F. Goodrich Co., Akron, Ohio.

One-Sleeve Rubber Apron

The apron of rubber sheeting shown in the accompanying illustration is designed to make the hair-cutting process easy, especially for the man who cuts his own hair and for the home barber. It fits around the neck of the person having his hair cut, covers his shoulders well, and forms a sleeve for his right arm, if he is doing his own barbering. The apron itself forms a kind of scoop that catches the hair as it falls. When used by a barber the sleeve portion fits over his arm. The apron is quickly made, requiring no stitching, and may be washed and sterilized after each using. Along the sides are fluted portions which hold it in its scoop shape when in use.—Emma C. Pease, Nantucket, Mass.

Barbers' Rubber Apron

Silk Gaiter for Misses

Here is a gaiter which combines great durability with attractiveness. It has an all-rubber silk finish upper, two buckles, black fleece lining, plain edge sole and kickoff heel. It should be a profitable line to handle because it is conservative enough to please mothers and attractive enough to meet the demands of the misses for whom it is designed. It is built in smaller sizes, also, for children, and will withstand rough usage, affording perfect protection from the cold and wet. Special provision is made to exclude snow from the top of the gaiter. When made up for children's play-wear, it may be had without the silk finish to the upper. — Hood Rubber Products Co., Watertown, Massachusetts.

Misses' Silk Gaiter

Renewable Sole Pads and Revolving Rubber Heel

These adjustable sole pads, which may be used for heel as well as sole, are designed to preserve the life of the sole as long as the upper portion lasts. The inner portion of the pad is a kind of button which is driven into the sole and over which the cover pad fits. The covers are renewable and spare pads are furnished in sets. They are interchangeable also. The revolving Navy heel shown in the corner of the illustration serves much the same purpose. It is attached by a screw to the center of the heel of the shoe, and may be revolved as occasion may require.—Redfern's Rubber Works, Limited, Hyde, England.

"Ped-Pads" and the Revolving "Navy" Heel

News of the American Rubber Trade

Dividends Declared

COMPANY	STOCK	RATE	PAYABLE	STOCK OF RECORD
Allis-Chalmers Mfg. Co., Inc.....	Com.	$1.00	Feb. 15	Jan. 24
American Rubber & Tire Co.....	Pfd.	8% q.	Jan. 1	Dec. 21
Firestone Tire & Rubber Co.....	6% Pfd.	1½% q.	Jan. 15	Jan. 1
Firestone Tire & Rubber Co.....	7% Pfd.	1¾% q.	Feb. 15	Feb. 1
General Tire & Rubber Co.....	Pfd.	1¾% q.	Jan. 1	Dec. 20
General Tire & Rubber Co.....	Com.	1½% q.	Feb. 1	Jan. 20
Kelly-Springfield Tire Co.....	8% Pfd.	$2.00 q.	Feb. 15	Feb. 1
New Jersey Zinc Co.....		$2.00 ex.	Jan. 10	Dec. 30
New Jersey Zinc Co.....		$2.00 q.	Feb. 10	Jan. 31
United States Rubber Co.....	1st Pfd.	2%	Jan. 31	Jan. 15

New York Stock Exchange Quotations

January 27, 1923

	High	Low	Last
Ajax com.	13⅞	13	13½
Fisk com.	15¼	14½	15
Goodrich com.	38	36	36½
Goodrich pfd.	92	90¾	91¾
Kelly-Springfield com.	50½	48½	49¼
Kelly-Springfield pfd.	107¼	106	107¼
Lee com.	28¾	28	28½
United States Rubber com.	60⅞	58½	59½
United States Rubber pfd.	102⅛	101¾	102

Akron Rubber Stock Quotations

Quotations of January 24 supplied by App-Hillman Co., Akron, Ohio, were as follows:

	Last Sale	Bid	Asked
American com	10	8	15
American pfd.	60	..	70
Amazon com.	2	..	3
Firestone com.	75	73⅝	75½
Firestone 6% pfd.	97½	97½	98
Firestone 7% pfd.	92¼	92	93
General com.	300	350	..
*General 7% pfd.	99	99	100
Goodrich 6½s	101¼	101¼	101⅝
Goodyear com.	12⅛	12⅛	12½
Goodyear 7% pfd.	41½	40	41½
Goodyear prior pfd.	85½	85	86
Goodyear 1st mtg.	115½	114¾	115½
Goodyear deb.	103¾	103½	105
India com.	89½	89	95
India 7% pfd.	90	85	95
Mason com.	5½	5	5¾
Mason 7% pfd.	40	35	40
Marathon	2½	2	2½
Miller com.	74½	74½	76
Miller 8% pfd.	104	102½	104¼
Mohawk com.	15	12	18
Mohawk 7% pfd.	70	69	75
Rubber Products	20	18	25
Seiberling com.	8	7¼	8
Seiberling 8% pfd.	54	50	56
Star com.	15	15	25
Star 8% pfd.	..	..	80

*Ex-dividend.

New Incorporations

1922

American Tire & Supply Co., November 3 (New Jersey), $2,500. A. Brooklyn, principal office, 323 Market street, Paterson, New Jersey. To buy and sell tires, tubes and accessories.

Automobile Tire Adjustment Corporation, The, December 4 (New York), $100,000. J. R. Skinner, president; F. G. Skinner, vice-president; J. J. Slechta, secretary and treasurer. Principal office, 110 William street, New York, N. Y. To repair tires.

Auto Tire Protecting Co., October 21 (Oklahoma), $25,000. E. W. and E. L. Austin; W. L. Chapman, all of Shawnee, Oklahoma. Principal office, Shawnee, Oklahoma. To deal in tires and accessories.

Carr, F. S., Co., The, December 14 (Massachusetts), $1,000. F. S. Carr, president, 86 Waban Hill Road, Chestnut Hill; T. H. Dumper, treasurer, 27 Ridgefield Road, Winchester; J. A. Duval, 135 University Road; M. F. Carr, 48 Lancaster Terrace, both of Brookline, all of Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in rubber and rubber goods, rubberized and waterproof fabrics.

Colossus Importing Corporation, December 28 (New York), 3,000 shares par value and 5,000 shares no par value. C. F. Smythe; R. Corcoran; C. Van Siclen, all of 165 Broadway, New York, N. Y. To manufacture rubber goods.

Gem City Tire & Sales Co., The, December 15 (Ohio), $15,000. R. Becker; J. G. Hill; G. T. Heinz; H. E. Coleman; C. Wachter. Principal office, Dayton, Ohio. To deal in tires and tubes.

Giese & Melvin, Inc., December 28 (Delaware), $500,000. L. C. Browne; M. B. Reese; L. S. Dorsey, all of Wilmington, Delaware. Delaware agent, Colonial Charter Company, 927 Market street, Wilmington, Delaware. To purchase, acquire, and deal in patent, patent-right, trade-mark, trade-name, for the manufacture and sale of rubber, leather, etc.

Hansen Rubber Products Co., December 16 (Delaware), $250,000. T. L. Croteau; M. A. Bruce; C. H. Blaske, all of Wilmington, Delaware. Delaware agent, Corporation Trust Company of America, DuPont Building, Wilmington, Delaware. To manufacture rubber goods.

Magic Electrolyte & Battery Co., December 14 (Delaware), $2,000,000. M. W. Cole; J. L. Welcott, both of Dover, Delaware. Delaware agent, Corporation Trust Company of Delaware, Dover, Delaware. To manufacture and deal in electrolyte storage batteries and primary batteries.

Matthews, C. K., Tire Co., November 7 (Arkansas), $25,000. C. K. Matthews, president and treasurer; G. J. Green, secretary. To distribute automobile tires, tubes, and accessories.

Mellinger Tire & Rubber Co., December 15 (Delaware), $600,000. T. L. Croteau; M. A. Bruce; C. H. Blaske, all of Wilmington, Delaware. Delaware agent, Corporation Trust Company of America, DuPont Building, Wilmington, Delaware. To buy, sell, and deal in automobile tires and tubes of every kind and description.

Midco Tire Co., October 26 (Oklahoma), $25,000. E. W. La Grant; C. H. Warson; C. Kelly, all of Tulsa, Oklahoma. Principal office, Tulsa, Oklahoma. To deal in tires.

Mid-States Rubber Co., October 31 (Indiana), $100,000. J. S. Hopkins, president; M. S. Cunningham, vice-president, G. A. Cunningham, secretary and treasurer. Principal office, 1620 Lafayette street, Evansville, Indiana. To manufacture rubber and composition rubber products.

Mobile Tire Co., Inc., December 23 (New York), $5,000. J. H., H. and B. Feiger, all of 60 St. Nicholas avenue, New York, N. Y. To deal in tires.

Newton Falls Rubber Co., December 9 (Ohio), $500,000. J. A. Elden; R. H. Shindler; W. V. Peters; M. H. Burns; I. Jordan. Principal office, Cleveland, Ohio. To manufacture rubber goods of all kinds.

New York Dental Specialty Manufacturing Co., December 28 (Delaware), $100,000. L. C. Browne; M. B. Reese; L. S. Dorsey, all of Wilmington, Delaware. Delaware agent, Colonial Charter Company, 927 Market street, Wilmington, Delaware. To manufacture and deal in rubber, celluloid, leather, and all dental specialties.

Oxford Tire Company of New England, October 25 (Massachusetts), $25,000. A. Palder, 144 Ruthven street, Roxbury; M. F. Culliney, 15 Olney street, Dorchester, both of Massachusetts. Principal office, Boston, Massachusetts. To manufacture, buy, sell and deal in automobile tires, tire rims, woven hose, and rubber hose.

Peninsula Rubber Co., December 13 (Massachusetts), $90,000. A. P. Keegan, president; L. F. Keegan, treasurer, both of 505 East Sixth street, South Boston, Massachusetts. Principal office, Boston, Massachusetts. To buy, sell and manufacture rubber and rubber goods, rubber soles, rubber heels, etc.

Pierce-Roberts Rubber Co., December 29 (New Jersey), $100,000. C. A. Pierce, Glen Ridge; H. W. and I. Roberts, both of 33 South Dean avenue, Trenton; W. Biddle, Hasbrouck Heights, all of New Jersey. Principal office, Heath and Brian avenues, Trenton, New Jersey. To manufacture rubber goods.

Standard Tire Co., Inc., October 25 (Alabama), $12,500. C. H. Denton, president and manager; J. H. McEvoy, vice-president; O. E. McEvoy, secretary and treasurer. Principal office, Mobile, Alabama. To deal in tires.

Sullivan-Shaw Tire Co., October 28 (Indiana), $25,000. E. J. Shaw, president; R. E. Sullivan, secretary and treasurer; D. D. Schurtz. Principal office, 436 South Michigan street, South Bend, Indiana. To distribute automobile tires.

Tennessee Rubber Co., November 27 (Tennessee), $25,000. J. M. Butler; C. B. Sawyer; A. D. McKnight; W. S. Winn; V. V. Moore. Principal office, Murfreesboro, Tennessee. To deal in tires and accessories.

Thomas Tire Co., The, September 16 (Indiana), $10,000. W. S. Thomas, president; G. B. Thomas, vice-president; H. F. Gorham, secretary; K. W. Gant, sales manager. Principal office, 315 North Delaware street, Indianapolis, Indiana. To manufacture tires.

Truck Tire Service, Inc., November 2 (Massachusetts), $5,000. F. L. Pratt, president, Winn street, Burlington; R. I. Innis, vice-president, 4 Manchester Road, Winchester; E. G. Innis, treasurer, 4 Manchester Road, Winchester, all of Massachusetts. Principal office Boston, Massachusetts. To manufacture, buy, sell, import, and export tires for motor trucks and other vehicles.

1923

A. and G. Auto Supply of Yonkers, Inc., January 8 (New York), $20,000. H. E. Anderson; B. Guterman, both of 24 Pier street, Yonkers, New York; L. Schlanger, 35 West 111th street, New York, N. Y. Principal office, Yonkers, New York. To deal in tires.

Acme Cushion Wheel Co., January 9 (Delaware), $750,000. N. and J. Cornfield, both of New York City; A. Sauve; A. DeClerco, both of Detroit, Michigan; J. S. Brandt, Lancaster, Pennsylvania. Delaware agent, Corporation Trust Company of America, DuPont Building, Wilmington, Delaware. To manufacture and deal in vehicle wheels and resilient, elastic, and spring wheels of all kinds.

Adirondack Tire & Rubber Co., January 17 (New York), $10,000. T. J. Brown, president; G. Mayo, vice-president; F. E. Shook, secretary; L. M. Brown, treasurer. Principal office, 14 Keenan Building, Troy, New York. To sell tires, tubes, and accessories.

Anderson Tire Works, Inc., January 8 (New York), $9,000. C. Cronenbold, 401 Dean street, Brooklyn, New York; O. Harriman, 225 East 64th street, New York, N. Y. To manufacture tires.

Bridge Tire & Tube Works, Inc., January 4 (New York), $5,000. S. Stoll, 292 East Broadway; A. Kaplowitz, 282 Madison street; P. Oppenheim, 30 Montgomery street, all of New York, N. Y. To deal in tires and tubes.

Collins Tire & Rubber Co., The, January 15 (Ohio), $25,000. W. F. Collins; H. L. Holland; H. A. Favors. Principal office, Cuyahoga Falls, Ohio. To manufacture tires.

Gleasonite Products Company, January 3 (Delaware), $300,000. M. Brown, Boston, Massachusetts; L. Brown, Brookline, Massachusetts; C. Peters, St. Louis, Missouri. Delaware agent, Edmund S. Hellings, 607 Equitable Building, Wilmington, Delaware. To manufacture, purchase, sell, and deal in composition and synthetic rubber products, shoes, soles, heels, tires, tubes, etc.

Kavanaugh Rubber Co., The, January 9 (Ohio), $5,000. W. O. Drake; W. W. Wilson; M. E. Nyquist; B. D. Holt. Principal office, Cleveland, Ohio. To deal in tires and tubes.

Meyers Rubber Products Co., The, January 9 (Ohio), $50,000. R. R. Jones; R. P. Meyers; J. E. Zoller; J. A. Lump. Principal office, Lorain, Ohio. To manufacture rubber goods.

Public Service Tire Co., The, January 2 (Ohio), $1,000. S. Spero; K. Litman; E. Mack; I. Bloomberg; D. H. Wasserman. Principal office, Cleveland, Ohio. To deal in tires and tubes.

The R. C. Jones Tire Service Co., January 5 (Delaware), $30,000. T. L. Croteau; M. A. Bruce; A. M. Hooven, all of Wilmington, Delaware. Delaware agent, Corporation Trust Company of America, DuPont Building, Wilmington, Delaware. To manufacture and deal in tires, tubes, and accessories.

Registering Tire Valve Corporation, January 16 (Delaware), $2,000. R. K. Thistle; H. C. Hand; S. C. Wood, all of 65 Cedar street, New York, N. Y. Delaware agent, United States Corporation Company, Dover, Delaware. To manufacture, design, and construct tire valves and gauges.

Seamless Ribbed Tube Co., The, January 5 (Ohio), $500,000. J. A. Elden; G. H. Field; W. Brodfeld; M. H. Burns. Principal office, Akron, Ohio. To manufacture rubber goods of all kinds.

Troy Tire & Rubber Co., Inc., January 4 (New York), $3,000. F. and A. Whitehouse, both of Troy, New York; J. T. Dinwiddie, Beacon, New York. Principal office, Troy, New York. To deal in tires.

Wellston Rubber Co., The, January 11 (Ohio), $30,000. A. B. Leach; H. E. Goddard; W. W. Neary; E. L. Erwin; N. Shelton. Principal office, Wellston, Ohio. To manufacture tires and tubes.

The Rubber Trade in the East and South

Manufactured Goods—New York

Every division of the rubber manufacturing industry is at the present time in full swing of capacity production, or soon will be. The prospect now is that in many rubber products record outputs will be made in 1923.

As stated elsewhere the estimated tire requirement for this year is set as 45,000,000. The half dozen largest tire producers alone are reported as turning out tires at 75 per cent of this rate, with capacity still in reserve.

The largest consumer of rubberized automobile topping has requisitioned the capacity output of several of the largest topping producers. With a new record output of cars planned for this year the facilities of all makers of topping will be taxed to meet the demand for goods.

Footwear manufacturers have experienced the best all-over climatic conditions for the use of their goods that they have known in years, stocks in dealers' hands are low and the factories are crowded with supplementary orders for warm goods for immediate use, and operating on full tickets for next season as well.

Mechanical goods plants are all virtually on full time schedule in all lines. Insulated wire plants, of which there are about 40, are reported in many instances to be booked up for 24-hour capacity output for two months ahead. Railway, signal, and all other lines of wire are included.

Record outputs are being made in heels. Every important producer is planning increased capacity to meet the rapidly increasing consumption of heels. Druggists' sundries, novelties, and weatherproofed clothing mills are going well on a full supply of standard seasonable goods.

New York

A new organization known as E. L. Bullock & Sons, Inc., 99 John street, New York, N. Y., will specialize in chemicals, colors and fillers for the rubber trade and kindred industries, acting also as distributer and exporter and importer of these materials. Executives of the new concern include E. L. Bullock, Sr., E. L. Bullock, Jr., C. S. Bullock, and J. H. Shearman.

A crude rubber department has been recently organized by Isaac Winkler & Bro. Co., of Cincinnati, Ohio, and 50 Broad street, New York, N. Y., the address of the new establishment being for the present 290 Broadway, New York, N. Y., former offices of Aldens' Successors, Limited, London, England. The last-named company has ceased business but will act as purchasing agents for Isaac Winkler & Bro. Co., in London, the Far East, and Brazil.

The managers of the new department will include Edmund Stevenson, formerly managing director of Aldens' Successors, Limited, of London, and Thomas A. Maguire, at one time president of that company's New York office. The new concern will act as correspondents and distributers for plantation and Congo rubbers carried by Bunge & Co., Antwerp, Belgium.

Effective January 2, the sales agreement has been terminated between the Dovan Chemical Corporation, 30 Church street, New York, N. Y., and the concern's former agents, the States Metals Co., Inc., the Dovan organization handling in the future its own sales of diphenylguanidine and "XLO" accelerators. The following sales agents will continue to handle the company's products in their respective territories: J. A. Kendall, Akron, Ohio; J. E. Odell, Boston, Massachusetts; Harry T. Kraft, New York, N. Y.; Martin, Hoyt & Milne, San Francisco and Los Angeles, California; and T. E. O'Reilly, Limited, Toronto, Canada. The Perth Amboy Chemical Works is the only other source of supply of these products, for which the Roessler & Hasslacher Chemical Co. are sole agents.

Announcement has been made that Joseph Chalfin & Co., Inc., 80 Washington street, New York, N. Y., are now also handling crude rubber, instead of, as formerly, buying and selling rubber scrap only.

H. Tyler Kay, who was formerly for three years connected with The Madison Tire & Rubber Co., Buffalo, New York, has returned to that organization as assistant sales manager in charge of sales promotion and advertising.

Connecticut

Announcement has been recently made of the resignation of the following officials formerly connected with the Carlisle Tire Corporation, Stamford, Connecticut: J. M. Gilbert, president and director; P. V. Zimmerman, treasurer; and Frank C. Williams, director. The concern was originally incorporated in June, 1917, as The Carlisle Cord Tire Co., leasing a factory at Andover, Massachusetts.

It has been officially announced that M. F. Judd has been recently appointed vice-president and general sales manager of The Raybestos Co., which manufactures at Bridgeport, Connecticut, "Raybestos" brake linings and clutch facings as well as other specialties.

Pennsylvania

The Philadelphia offices of The Electric Hose & Rubber Co., Wilmington, Delaware, have been recently removed to the Land Title Building, Broad and Chestnut streets, Rooms 911-912.

The United States Asbestos Co., Lancaster, Pennsylvania, has registered its trade mark, "Asbestos-Cushion," for asbestos fabric and brake and transmission lining.

The Trexler Company of America, Philadelphia, Pennsylvania, has increased its capital from $200,000 to $1,500,000. The company has acquired a plant at Wilmington, Delaware, where all "Trex" lines will be consolidated and manufactured. The following officers were recently elected: H. J. Adair, president; E. J. Flannery, vice-president and secretary; E. S. Perot, Jr., treasurer; W. P. Coghlan, vice-president and director of sales; W. G. Penfield, vice-president in charge of manufacturing.

The South

Two new warehouses, located at Baltimore, Maryland, and Toledo, Ohio, have been recently established by The New Jersey Zinc Sales Co., 160 Front street, New York, N. Y. From Cleveland, Cincinnati, or Toledo, the company's Ohio centers of distribution, can now be secured supplies of zinc oxide or "Albalith," and withdrawals of these commodities can be arranged by communicating with The New Jersey Zinc Sales Co.,

Room 1138, Guardian Building, Cleveland, Ohio. Withdrawals of pigments from the Baltimore warehouse can be made by addressing The New Jersey Zinc Sales Co., 160 Front street, New York, N. Y.

The Universal Tire & Rubber Co., Houston, Texas, has transferred by the receiver to H. W. Brown, through receiver's deed, approved by the Judge of the 11th District Court of Harris County, Texas, its entire property and plant. Mr. Brown is acting as organization trustee for the bondholders and others.

The Rubber Trade in New Jersey

Manufactured Goods—Trenton

During the past month the rubber manufacturers of Trenton have been quite busy. This is true of the various lines of goods manufactured here, which include everything except boots and shoes. Manufacturers of garden hose are extremely busy and as far as we know none of them are quite up to date on deliveries, because of the large current business which has been coming in right along. Although rubber belting business is usually dull at this season of the year many of our local manufacturers report the receipt of orders of good size. Tire manufacturers are busier than at any time within the last three or four months. The advance in tire prices has done much to increase the demand. Mechanical goods manufacturers have been advancing their prices to keep pace with the advancing costs of crude rubber and cotton goods, as well as labor and other operating expenses.

Rubber Growers in Trenton

Trenton was honored recently by a visit from the representatives of the British Rubber Growers' Association, who, accompanied by Horace DeLisser and A. L. Viles, president and general manager respectively of The Rubber Association of America, spent two days in Trenton. A number of rubber manufacturers had the pleasure of meeting Sir Stanley and Lady Bois, J. P. Burgess, and H. Eric Miller, and conferring in a general way on the production and price of plantation rubber. The English visitors made a very favorable impression among the local manufacturers, and their explanation of the restriction plans and regulation of output of plantation rubber cleared up many doubts and misgivings. The sentiment was expressed that there was neither desire nor intention to advance the price of crude rubber to unreasonable figures, and it was claimed that regulation and restriction arrangements were calculated to reduce speculation and materially assist in stabilizing crude rubber values. The argument that the rubber planter was entitled to a fair living profit was unanswerable, and the figure which would show such a profit was not considered unreasonable. Many questions in connection with the handling, grading, shipping, and inspection of plantation rubber were discussed, and the rubber planters acknowledged the possibility of making improvements in this direction. An inspection tour taking in most of the rubber plants of Trenton was made, and the visitors were surprised at the volume of production in the plants inspected.

Trenton

The Acme Rubber Manufacturing Co. has installed additional boiler and power capacity, electric motors, and other new machinery, involving an expenditure of over $60,000 in the last two months. These improvements were made necessary by the large increase in the company's business.

The Hamilton Rubber Manufacturing Co. recently completed the installment of a number of new 60-inch mixing mills, and an electrically driven 4-roll calender of the latest design, made by the William R. Thropp & Sons' Co.

The Murray Tire & Rubber Co. is getting well under way and has made many improvements in the former plant of the Empire Rubber & Tire Corp., looking toward increased production and a substantial reduction in operating expenses.

The Home Rubber Co. is always busy, chiefly because of its manufacturing so many exclusive specialties, especially packings of various kinds, for which it has practically no competition.

The Pierce-Roberts Rubber Co., Trenton, New Jersey, recently incorporated under the laws of the state of New Jersey and capitalized at $100,000, is the successor to Robert J. Pierce, Inc., manufacturer of druggists' rubber sundries. The new company will specialize in molded and dipped goods and also make rubber toys and novelties. Harry W. Roberts is president and secretary of the new concern, while Clifford A. Pierce is vice-president and treasurer. These officials with Walter Biddle and Joseph Roberts constitute the board of directors. The original firm, Robert J. Pierce, Inc., 80 Reade street, New York, N. Y., will continue the distribution of the new company's products.

The William R. Thropp & Sons Co., rubber machinery manufacturers, have increased their capital stock from $50,000 to $750,000, according to articles of amendment filed at Trenton. The officers of the company are: John E. Thropp, president, and Joseph W. Thropp, secretary-treasurer.

Southern representatives of the Thermoid Rubber Co. were guests of the concern during January. The representatives, twelve in number, were from Huntington, West Virginia, and visited the plant here for the purpose of discussing business conditions and inspecting the manufacturing industry. Accompanied by Robert Lee, of the Thermoid Company, the guests were entertained at luncheon at Hildebrecht's.

The Reading Rubber Co. has been organized at Trenton with a capital stock of $250,000. The incorporators are Samuel H. Bell, Reading, Pennsylvania; Jesse P. Stiles, Allentown, Pennsylvania; and Frank C. Myers, Trenton, New Jersey. The company has a plant at Kutztown, Pennsylvania, and is engaged in the manufacture of tires, tubes, and all kinds of rubber goods. Offices have been opened in the American Mechanics Building, 137 East State street, Trenton, and a sales depot will be established. Maxwell A. Kraemer is the Trenton agent in charge.

The Spartan Rubber Co., of Yardville, a suburb of Trenton, recently held a sales conference at which twenty-two representatives participated. The headquarters were at the Stacy-Trent Hotel, where luncheon was served, and in the afternoon an inspection of the plant took place and an instructive talk on tire and tube making was given by the superintendent, Karl Kavanaugh. It was announced at the meeting that seventy per cent of the company's output for 1923 has already been contracted for.

New Jersey Notes

The plant of the Smith Rubber & Tire Co., Saddle River, was put up for sale on January 9 by William L. Brunyate, trustee. The highest bid was $114,500, made by a syndicate of rubber manufacturers from Passaic, Paterson, and Newark, headed by Abe Brooklyn. None of the bids was accepted, however, and the decision rests with Referee George R. Beach.

Officials and members of the sales force of the Lambertville Rubber Co., Lambertville, recently held their annual banquet in the Princeton room at the Stacy-Trent Hotel, Trenton. Covers were laid for sixty. C. E. Murray, general manager, acted as toastmaster, and talks were given by several of the guests. Twenty-three road men, selling goods in various parts of the country, were in attendance.

The Sterling Tire Corporation, Rutherford, has been incorporated at Trenton, with $10,000 capital, to deal in rubber tires, tubes and all articles made of rubber. The incorporators are William A. Ryan, Thomas C. Thrippe, and Isaac Cassedy, all of Rutherford. The office of the concern will be at Maple avenue and Erie railroad, Rutherford, with Joseph A. Miller as agent in charge.

Howard L. Zebe has been appointed sales promotion manager in charge of all advertising for the Howe Rubber Co., New

Brunswick. He was formerly connected with the Kelly-Springfield Tire Co. and is widely known as an executive in the rubber industry.

United & Globe Rubber Corporation Organized

The United & Globe Rubber Corp., recently organized, has absorbed the former United & Globe Rubber Co., Trenton, New Jersey. All the assets, patent rights, trade marks, and business of the old company have been transferred to the new corporation.

The United & Globe Rubber Co., established 23 years ago, was under the presidency of John S. Broughton, one of the most prominent and successful rubber goods manufacturers in the United States. Mr. Broughton has been elected chairman of the board of directors of the new corporation; Guy de la Rigaudiere, president; Victor Durand, Jr., vice-president; G. J. P. Raub, second vice-president; Charles E. Swan, secretary and treasurer; W. McK. Milner, assistant treasurer. Directors have been elected as follows: John S. Broughton, Guy de la Rigaudiere, Victor Durand, Jr., G. J. P. Raub, Latimer R. Baker, John E. Hess, and Charles E. Swan.

Guy de la Rigaudiere

John S. Broughton

Guy de la Rigaudiere, the new president, is also president of the Traveler Rubber Co., Bethlehem, Pennsylvania, a successful automobile tire manufacturing concern.

This reorganization, initiated and negotiated by W. McK. Milner, export manager of the United & Globe Rubber Co., has for its main purposes the provision of abundant capital for enlarging the United & Globe plant and taking care of the growing business of that company, long an important factor in the production of specification and general mechanical rubber goods, and rubber and asbestos automotive equipment. Their output is distributed through branches maintained in 12 important American cities from coast to coast, also by sales agents in foreign countries.

No changes are contemplated in the factory organization and sales personnel of the old company. Fred D. Williams, formerly with The Gilmer Co., Philadelphia, Pennsylvania, and Johns-Manville Co., New York, is assistant to the president. George W. Skirm will continue as general manager of the newly organized corporation.

The Rubber Trade in Rhode Island

The outlook for the Rhode Island rubber industry is the most encouraging that it has been in several years and the managers of the various plants are not only very optimistic for the current year but are making preparations to meet a general renewal of activities. This is especially true in footwear. Severe winter weather, commencing early and continuing steadily to the present time, created an unusually heavy demand for these goods. Manufacturers of rubber footwear last summer and fall, anticipating an open season, did not make up more than the usual amount of stock, so that when the demand struck the retail dealers this winter they turned to the jobbers. The latter gave out all they had on hand and then couldn't get any more. In consequence there is hardly a retail store, jobbing house, or manufacturer in this section of the country that has any stock of these goods. When the manufacturers, therefore, get under way for the season and arrange their working schedules for the year, it is fair to presume that the boot, shoe, and arctic departments, at least, will find orders enough on hand to keep them in operation full time and capacity for several months to come.

After being closed from over the Christmas holidays, the factory of the National India Rubber Co., at Bristol did not reopen until January 2. During the shut-down an inventory of the entire property and stock of the company was taken, necessary repairs were made, and considerable new work was laid out and a general overhauling of machinery, apparatus, and equipment made.

The company begins the new year with 4,000 hands on its payrolls. The following appointments have been made: Carleton W. Short to be chief inspector in the Keds division; J. E. Robinson to have charge of all technical work in both the wire and Keds divisions, and M. J. J. Drummer to be technical superintendent of the Keds division.

The Woonsocket Rubber Co. footwear division, Woonsocket, announced on January 22 that both the Alice Mill at Woonsocket and the Millville mill at Millville will go to full time schedule at once, which it is hoped will be maintained throughout the year.

The Columbia Narrow Fabric Co. is making extensive improvements at its plant in Shannock. Ground has been broken and the concrete foundations are being laid for an addition to the weave shed, which is to have more than 1,000 square feet. Several storehouses and smaller sheds are also to be added and thousands of dollars' worth of new machinery of the latest type is to be installed as soon as the buildings are ready, which it is expected will be by May 1. More than $50,000 is to be expended in these additions and improvements. The company is also just completing a new office building, and ten additional cottages on Columbia Heights will be built for the accommodation of the company's employes. Leon W. Clarke, overseer of the rubber room of this concern, has recently resigned to take a position elsewhere.

The Pawtucket Vienna Braid Co., will erect a new building at the corner of Johnston and South Bend streets, Pawtucket, for the manufacture of elastic braid. Installation will be made of 500 braiders, together with motor spoolers and winders. As soon as the new building is ready the machinery and equipment in the company's present plant on Broadway will be transferred.

Owing to the recent death of George Astill, general manager and treasurer of the Glendale Elastic Fabrics Co. with plants at Easthampton, Massachusetts, and Providence, his son, William Astill, who has been superintendent of the Providence plant for the past twenty years, has succeeded his father as general manager and treasurer. His son, George W. Astill, will succeed him as superintendent of the Providence plant.

The Jenckes Spinning Co., Pawtucket, will transfer the entire machinery and equipment of its United States Cotton Co. plant on Foundry street to the plants of the company in Gastonia, North Carolina, and Drummondsville, Canada. Already one-third of the machinery has been moved to the Southern plant of the Jenckes Co., and, according to Frederick C. Hall, agent for the concern, the plant at Pawtucket is closed for all time. For some time past, it is said, the company heads have been convinced that it is impossible to meet Southern competition in view of the lower wages paid there and the longer hours which prevail. Up to a few months ago, when the plant was closed temporarily, the mills employed between 450 and 500 hands and contained approximately 58,000 spindles, valued at more than $500,000. As yet the officials of the company have not definitely decided what will become of the plant, but in all probability it will be sold.

Augustus O. Bourn, treasurer of the Bourn Rubber Co., Providence, and a former Governor of Rhode Island, is one of the oldest members of the Masonic fraternity in this State. At the recent annual "Gold Medal Night" of What Cheer Lodge No. 21, an informal reception was tendered to nearly a score of the brethren who have been craftsmen fifty years or more, and in accordance with the annual custom an additional gold bar was presented each of these "immortals," indicating another year's travel toward "that bourne from whence no traveler returns." Mr. Bourn's bar was inscribed "62 Years" and is the twelfth he has added since receiving his half century gold seal. He is still hale and hearty, notwithstanding he is "88 years young."

The Rubber Trade in Massachusetts

Manufactured Goods

Production in all lines of rubber goods continues at or better than the high mark registered at the end of the year. Severe winter weather has exhausted wholesale and retail stocks of footwear, taxing manufacturers to capacity. Druggists' sundries have been in exceptionally heavy seasonal demand.

The record sale of automobiles during the past year and assurances of a larger production this year have maintained tire output unabated. The same is true of automobile topping. Better general business is creating a good demand for mechanicals, with factories operating on full time. Insulated wire is still active for both building and railway requirements. Hard rubber sales are satisfactory and prospects excellent. The same may be said of heels and soles, novelties, and miscellaneous small goods. Makers of weatherproof clothing are beginning to anticipate their spring business, while reclaimers are beginning to reap material rewards for their optimism.

No Changes in Footwear Prices

Rising costs of crude rubber, cotton fabrics and other materials used in the manufacture of rubber footwear had led both the wholesale and retail trade to expect advanced prices for 1923. The new price lists issued January 1 show no changes and came as a welcome surprise, although bearing the customary footnote: "Subject to change without notice." That advances will come when present stocks of low-priced raw materials have been exhausted seems certain, however.

Meanwhile the ability of manufacturers to start the new year with prices unchanged gives retail merchants the opportunity to avoid last season's mistake of underestimating their requirements and to anticipate their probable demands by reasonable advance orders, enabling manufacturers to render adequate service without shouldering the entire responsibility.

Last season, although manufacturers and wholesalers stocked liberally, retail stocks were so depleted that the late autumn rush to replenish them left manufacturers powerless to meet the demand. With the sudden coming of severe winter weather retail stocks were wiped out and retailers lost both business and good will. The coming season should see better cooperation throughout the trade and the new price lists in the face of advancing material markets will help greatly toward that end.

Cambridge Rubber Co. Dedicates New Building

The Cambridge Rubber Co., Cambridge, celebrated the opening of the firm's new factory building with a dinner and dance given by the company and a vaudeville and minstrel show presented entirely by employes.

The new building is 187 by 85 feet, four stories high, and provides about 60,000 square feet of additional floor space. The three upper floors have been in use for about two months, and the first floor will soon be used for a new mill and calender room. When this new addition is fully equipped the plant will have a daily capacity of 16,000 pairs of tennis and rubber shoes, and this production will be reached about February 15.

Boston

Roger Williams, who for more than twenty-five years has been associated with the Hodgman Rubber Co., Tuckahoe, New York, joined the selling force of the Clifton Manufacturing Co., Jamaica Plain, on January 1. He has been well and favorably known for many years in the rubber clothing trade of Massachusetts, which will be his territory.

The Boston wholesale office of the Hood Rubber Products Co. was moved on December 26 from its former location at 100 Summer street, to the eighth floor at 186 Lincoln street, in the heart of the shoe and leather district.

A unique shoe style show was held at the Boston Shoe Trades Club on the evenings of January 2 to 4, inclusive. The exhibitors consisted of thirty-five New England manufacturers doing business exclusively with the wholesale trade, the aim being to show to volume buyers the advance footwear fashions to reach retailers in time for Easter selling. Buyers came from the East, South and Middle West. The public was excluded. So successful did this plan to promote early buying prove that larger participation for the next show is anticipated. Rubber heel and sole manufacturers were represented by the Avon Sole Co., of Avon; Clifford Co., of Boston; and the Hanover Rubber Co., of West Hanover.

The Peavey Rubber Co., Inc., which was incorporated last September with a capital of $40,000, is New England distributer for McClaren Autocrat cord tires and tubes, manufactured by the McClaren Rubber Co., Charlotte, North Carolina. R. A. Peavey, of Newton Center, Massachusetts, is president of both companies.

Massachusetts

Sales of the Hood Rubber Co., of Watertown, for the fiscal year ending March 31 next, are expected to total about $26,000,000, compared with $23,844,000 in 1921 and $32,867,000 in 1920. The drop in 1921 was due chiefly to price reductions. Throughout the depression the company has maintained its regular $4 dividend on its common stock, and earnings for the present fiscal year are expected to be rising $8 a share. The firm's daily capacity is 75,000 pairs of rubber boots and shoes, 1,500 automobile tires and 2,000 inner tubes.

The report of the Massachusetts Department of Labor and Industries, which has recently undertaken the collection of monthly data relative to employment and wage conditions, contains the following regarding manufactures of tires and other rubber goods in December, 1922: Number of firms reporting, 9; number on payroll, 14,476; total amount of payroll, $365,939; average weekly wage, $25.28.

Experiments in the widespread use of rubber latex in a variety of manufacturing processes, with superior results in certain instances, have lent great interest to the recent announcement of W. B. Pratt, the well-known rubber chemist of Newtonville, who claims to have produced a practical dispersion of crude rubber with water. The story of this discovery, continued from the January issue, furnishes one of the feature articles of this number.

Officials of The Fisk Tire Co., Inc., report the recent resignation of J. A. Bowerman, formerly associated with the Fisk Division at Chicopee Falls, Massachusetts. Mr. Bowerman has been with the organization for five years, during the last three of which he served in the capacity of assistant general production superintendent.

Seth R. Clark, recently superintendent of The Braender Tire & Rubber Co. and former chief chemist and technical superintendent of The Republic Rubber Co., has become technical adviser in the development department of The Fisk Tire Co., Inc., Chicopee Falls, Massachusetts.

The Rubber Trade in Ohio

Manufactured Goods—Akron

The first month of the new year has witnessed a continuance of the high production of all varieties of rubber products registered during the last month of the old year. Tire production continued unabated and in some instances slight advances were indicated by increased working forces. It is not unlikely that this gradual increase in tire output will be continued until the peak for the year is reached some time in June or July. As far as can be seen now there is absolutely nothing to prevent the present year from breaking all records.

In other lines the same conditions obtain. Mechanical goods sales have shown increases in practically every industry and in every section of the country. In the boot and shoe field everything points to a new record year. Specialties in this line have shown a remarkable sale. The sale of hard rubber radio parts continues to be very good. This business has a seasonal character and the season is now at its height.

In other lines of hard rubber, production output continues steady and the demand for hard rubber parts from automobile makers and others gives promise of being exceedingly good. The severe weather which has obtained in many parts of the North, making for disease, especially cold, la grippe and pneumonia, has been evidenced in the sale of druggists' sundries. The higher market for crude rubber has favorably affected the business of reclaimers, whose plants are beginning to show renewed activity after a long period of dullness.

Advanced Tire Prices and "Gyp" Tires

The advanced tire prices which became effective shortly after the first of the new year spell prosperity for the rubber industry during the ensuing year unless unforeseen developments should prevent. This revives a factor which has been the object of much discussion on the part of tire makers,—the efforts of the "gyp" tire manufacturers to flood the market with cheap products.

The prices of all companies, with very few exceptions, moved upward during the last week of December, following the lead of The B. F. Goodrich Co., in Akron, and the United States Rubber Co. and the Kelly-Springfield Tire Co. in the East. While the adjustments were not on a flat percentage basis the advance in all tires was between 10 and 12 per cent on an average, some of the larger sizes advancing more, while few advanced less than 7 or 8 per cent.

Despite the low prices during the past year the larger and better financed companies, through economies, increased efficiency, and better sales methods were able to show a profit, and with the increased prices now obtaining the present year should be a very good one for the manufacturers.

The tide of cheap products, which was stemmed by legitimate manufacturers offering standard tires at prices which the "gyps" could not underbid, will now probably become a factor in the market, and primarily in the more remote communities where tires are less well understood. One of the reasons why price advances were held off as long as possible was to forestall this very action on the part of the "gyp" producers.

Akron Opinions on Crude Rubber Supply

William C. Geer, vice-president of The B. F. Goodrich Co., head of its research department, and author of the recently published book entitled "The Reign of Rubber," predicted early in January that the next five years will witness a shortage of crude rubber and that the plantations which seem overdeveloped at the present time will have to be expanded.

This statement from a recognized authority lent new interest to the efforts which have been made during the past month to interest the United States Government in the development of crude rubber plantations in the Philippine Islands. Dr. Geer asserts that the consumption of crude rubber last year was far in excess of all predictions early in the year and that estimates of existing stocks indicate that the world has less than a year's supply as a surplus.

Harvey S. Firestone, president of the Firestone Tire & Rubber Co., because of his objection to the Stevenson plan, has placed before the United States Government a proposal that the government aid both directly and indirectly in the development of crude rubber plantations in the Philippines.

The soil, Mr. Firestone said, is ideal, while climatic conditions are favorable. In fact, crude rubber is being produced on the islands and can be produced in the future for less than in the Far East.

While it is felt in many quarters here that the curtailment of crude rubber production and export will adjust itself through the workings of the infallible law of supply and demand, the announcement that the world may expect a shortage of crude rubber instead of what until recently had appeared to be limitless surplus, widened interest in the Philippine proposal.

General Tire Company Prosperous

Many factors contributed to the remarkable showing made by the General Tire & Rubber Co. for 1922, which increased its sales more than $1,600,000; increased surplus account five fold; added $1,100,000 to its total assets, and started construction on new plant facilities for doubling its production without any new financing.

Outstanding among these factors is the policy of refusing manufacturers' business, selling its product only to dealers, making those dealers exclusive agents, accepting only the highest type of dealer accounts, and turning inventory over rapidly.

The officers and directors of the company were reelected at the annual meeting. They are: M. O'Neil, president; William O'Neil, vice-president and general manager; W. E. Fouse, secretary and assistant treasurer; Charles Herberich, treasurer; William J. Cahill, assistant secretary; T. F. O'Neil, G. F. Burkhart, J. A. Diebolt, and W. L. Beckley, directors.

Goodrich Buys Interest in Ames Holden Tire Co.

The B. F. Goodrich Co. has followed the lead of the other large producers of rubber products in entering the British market through acquiring interest in a rubber plant in Canada. The company officially announces that controlling interest of the Ames Holden Tire Co., of Kitchener, Ontario, Canada, has been taken over and that the plant will make a complete line of automobile tires with the Goodrich brand. The plant has a present capacity of 1,000 tires a day.

The company is now represented through manufacturing plants in the most strategic parts of the world. The European market is supplied from the subsidiary operated near Paris, France, and the Oriental and Japanese market is supplied from the Yokohama Rubber Co. plant at Yokohama, Japan.

The location of American subsidiaries opens all of England's markets on an equal basis with any English or colonial manufacturer, and the movement to Canada has materially aided the Goodrich company in holding the world's markets.

Firestone Activities

The announcement by the Firestone Tire & Rubber Co. that the company has purchased a large block of stock to be offered for sale to employes at $70 a share, although the present market is considerably higher, has brought out the fact that the Firestone company is the only large industrial corporation in which every employe is a stockholder.

The Firestone Steel Products Co., a subsidiary of the Firestone Tire & Rubber Co., and a producer of a large percentage of the automobile rims of the country, is gradually moving into its new plant south of the Firestone factory. The new plant, which has been completed for more than a year and a half,

is more than a sixth of a mile long and 250 feet wide and will materially increase the capacity of the company. A large part of the output is made up of solid tire bases.

Akron

The Miller Rubber Co. will go into the rubber glove field by early spring, according to present indications. The plant which is being built to house the new department is nearing completion, and as soon as machinery has been installed the company will actively start in the business. The Miller Rubber Co. introduced the manufacture of rubber surgical gloves in America thirty years ago and for many years made this a major part of its business. Three years ago the company sold the department to a Cleveland company and is now reentering the field, following expiration of its contract to remain out of the field for a specified time.

F. E. Titus, who since 1919 has been director of sales of the International B. F. Goodrich Co., was elected second vice-president of that company several months ago.

F. E. Titus

Mr. Titus has had many years of selling experience with the Goodrich company. At various times he has been manager of the Pittsburgh, Pennsylvania, and Buffalo, New York, branches. In 1917 he was transferred to the foreign sales department as assistant manager with headquarters in New York, N. Y., and in 1919 was brought to Akron, Ohio, to take full charge of the company's foreign sales.

The Osborn Engineering Co., Cleveland, Ohio, has completed plans for the new buildings to be erected by The General Tire & Rubber Co., Akron, as part of its program of extension, and contracts have been awarded the Moran Co., Akron. The proposed extensions will cost $100,000.

The Swinehart Tire & Rubber Co. has increased production and added new men to its working forces. During part of the past month the plant has been working nights. Approximately 200 more men are employed than two years ago, the increase during the past year being in the neighborhood of 100. Increased sales of truck tires to a large extent made the increased production necessary.

Frank K. Espenhain, vice-president and head of foreign sales of the Goodyear Tire & Rubber Co., has sailed for Europe on his semi-annual trip of investigation. During the past month C. M. McCreary, of the Goodyear highway department, returned from a trip through Europe.

The Goodyear Tire & Rubber Co. will sell its half ownership in the Akron, Canton & Youngstown Railroad, represented by 75,000 shares of $100 par, common stock, at public auction from the Court House steps on February 10. The company took the stock from the former president of the company, F. A. Seiberling, to close an account due from the president for approximately $3,500,000. Mr. Seiberling purchased control of the road to assist in the development of Goodyear shipping facilities and also to develop a new industrial Goodyear home suburb west of the city which was to be connected with Goodyear by means of a rapid transit system.

Harry L. Post, a member of the sales organization of the Seiberling Rubber Co. since the inception of this company a year ago, and formerly connected with the Goodyear Tire & Rubber Co. and The B. F. Goodrich Co., has been named vice-president and sales manager of the company, following the death of Irving R. Bailey.

Referee in bankruptcy, Harry L. Snyder, announces that the composition offer of 5 cents on the dollar made to the creditors of the Phoenix Rubber Co. has been confirmed by the Federal District Court, following its acceptance by the creditors. The stockholders, who still have the plant in their hands, have not stated what their future plans for the company are.

The Gregory Rubber Co., producer of dipped goods, reports that the market for its product has grown rapidly in England during the past year and that its export business is beginning to rival its domestic business. This increase is largely due to the high cost of naphtha in England which makes it difficult to compete with American producers. The company's business for the past year was in the neighborhood of $80,000, a slight decrease over the previous year, due primarily to lower prices.

Frank Zech, formerly Singapore buyer for Fred Stern & Co., Inc., 277 Broadway, New York, N. Y., crude rubber importers and dealers, has been appointed Akron representative of that firm with offices in the Peoples Bank Building.

Under the new name of The Colonial Insulator Co., the organization formerly known as The Colonial Sign & Insulator Co. will specialize at Akron, Ohio, in the production of porcelain forms for dipped goods. With the change of name the concern was also authorized to increase its capitalization from $50,000 to $200,000. Executives include James R. Hemphill, president; R. E. Armstrong, vice-president; and W. H. Moltz, secretary and treasurer. The above, with L. W. Camp and William Motz, constitute the board of directors. These officials state that the outlook for 1923 is most encouraging, while their plant is at present running at full capacity.

Ohio

Operations at the Interlocking Tire Co.'s plant in Mogadore will be resumed following a shut-down for repairs during the latter part of December. Most of the creditors of the company have been paid off and when operations are resumed a new tire will be placed on the market. Output since operations were started on finances furnished by stockholders has not exceeded 160 tires a day.

New equipment has been recently purchased by The Studebaker-Wulff Rubber Co., Marion, Ohio, and production at the plant is soon to be increased to 1,000 tires a day. During the past year the output has been steadily growing, with the result that the maintenance of three eight-hour shifts has for several months been necessary. In addition to the installation of new machinery the construction of another building, 50 by 250 feet, is being contemplated. B. F. Wulff is vice-president and general manager of the company.

Cordtex Mills, 1501 Euclid avenue, Cleveland, have completed new buildings at Mill No. 1, Bell avenue, Elyria, Ohio, where cord tire fabric only will be manufactured. The mill is equipped with 2,000 twister spindles and 10 looms run by electricity and will be managed and operated by the Textile Service & Equipment Co. J. L. Gregory is treasurer of Cordtex Mills.

Rubber Trade in the Midwest

Manufactured Goods

Rubber goods manufacturers in the Midwest are meeting the insistent demand for product on all sides with virtually full time production in all lines. Tires, tubes, and mechanical goods are leading. Fuel and transportation conditions admit of much improvement before they can be satisfactory; meantime, deliveries of manufacturing supplies and finished merchandise are being effected with the least delay possible under the prevailing conditions.

Midwest Rubber Manufacturers' Association

The fourth annual dinner of the Midwest Rubber Manufacturers' Association was held on the evening of January 30, at the Hotel Morrison, Chicago, Illinois. The annual meeting and

election of directors occurred in the afternoon of the same date and at the same place.

These events unfortunately occurred too late in the month for a more complete report in this issue.

The Midwest

With the purpose of benefiting the smaller and lesser-known tire manufacturer, an organization known as Rubber Manufacturers Associated Sales, Inc., has recently opened offices at 624 South Michigan Boulevard, Chicago, Illinois, under the general management of Paul P. Parker. The new concern plans to combine the sales of several tire manufacturers under one trained sales and advertising organization covering each state. By these means it is believed that there will be effected an economical saving and wider distribution for each individual manufacturer.

The new building of the Westinghouse Electric & Manufacturing Co. at West Pershing Road and Leavitt street, Chicago, Illinois, will be used for a combination district sales office, warehouse, and service shop. It will be seven stories high, will contain 218,000 square feet of floor space and will be of reinforced concrete construction. It is the first of three buildings to be erected at this location and will cost $700,000.

The Wishnick-Tumpeer Chemical Co., importer and dealer in rubber chemicals, oils and colors, 365 East Illinois street, Chicago, Illinois, has been recently appointed sole selling agent for the products manufactured by The Chicago Color Works, Waukegan, Illinois. This company specializes in Fer-Ox yellow and Fer-Ox red, colors which contain a high percentage of iron oxide and are especially adapted for rubber manufacture. For the convenience of the trade the Wishnick-Tumpeer company will carry stocks of these materials at its Cleveland and Chicago warehouses.

The International Rubber Company of America, Anderson, Indiana, has shown a marked improvement since reorganization. Gross operating profits for nine months have totaled $95,857.52; the debt assumed under the reorganization plan has been wiped out; while orders at the factory assure continued production for the next ninety days. The output is at present 1,000 tires a day, while within the next thirty days a similar number of tubes will be produced. Plans are also under consideration for still further increasing tire production to approximately 1,500 casings a day. J. D. Wiggins is president and general manager, and H. W. Lantz is factory manager.

Operations are soon to begin at the plant formerly owned by the Boone Tire & Rubber Co., Chippewa Falls, Wisconsin, and recently transferred by Peter J. Murphy, trustee in bankruptcy, to the Wenstone Rubber Products Co., Chicago, Illinois. The property in question comprises four acres of land, on which have been erected the main factory with several smaller buildings. After the completion of certain alterations the plant will have a capacity of 1,000 tires a day. Heretofore the Wenstone organization has been manufacturing automobile tubes and hard rubber specialties. Officials include: H. B. Wendell, president; William Mueller, vice-president; and Edward Wendell, secretary and treasurer.

The Rubber Trade on the Pacific Coast

Manufactured Goods

The rubber trade on the Pacific Coast entered upon the new year with every indication of well-distributed prosperity. In every branch of the industry the progress attained in 1922 has been sustained during the first month of 1923. This encouraging condition is almost as pronounced in the Northwest as in the Southwest, where trade is brisk except in footwear and apparel needed for rainy weather. Here it is that trading in tires reaches its maximum in relation to population; and even the January 1 increases to consumers have had scarcely any effect as a sales deterrent.

Several large installations of heavy transmission belting and the sale of much elevator and conveyor belting is reported at several points. Oil companies are still buying considerable suction and delivery hose, and makers of various kinds of valves, packings, and other rubber goods for the oil fields report an increasing demand. San Francisco mills which specialize largely on water hose are busy delivering goods for the spring trade and they report an unprecedented volume of orders. Branches of the big eastern and midwestern rubber companies state that they never had such a lively inquiry for mechanical goods.

San Francisco

General Manager J. B. Brady of the western division of the United States Rubber Co., with headquarters in San Francisco, started January 16 on a tour of the Southwest. He was accompanied by H. A. Farr, in charge of United States tire distribution in the western territory.

Heavy belting, high grade sprinkling hose, printers' rollers, and various mechanicals are being manufactured by the Universal Tire & Rubber Co., 938-958 Harrison street, San Francisco. George M. Stevens is president of the concern.

The Coast Tire Co., Oakland, is one of the thriving young concerns on the coast, making a superior grade of tubes and casings. The mid-month daily production was 412 tires of all standard sizes (chiefly cords) and 300 tubes.

H. O. Feibig has been appointed coast manager by the Gates Rubber Co., Denver, Colorado, with headquarters at San Francisco.

The Northwest

The Gates Rubber Co., Denver, has established northwest headquarters at Park and Flanders streets, Portland, Oregon, with Charles Coombs in charge. His territory covers Oregon, Washington, and a part of Idaho.

J. A. Leatherman, four years Portland branch manager for Goodyear, and two years in business for himself as Kelly-Springfield dealer, has been selected by General Sales Manager Alfred A. Aya, of the Columbia Tire Co., Portland, as its local branch manager.

W. A. Cluff, secretary of the Mason Tire & Rubber Co., Akron, and C. W. Dennison, Pacific Coast manager for Miller interests, were recent guests of Catlin Wolford, of the Portland branch, who also has charge of the northwest territory.

A. E. Vernier, vice-president and general sales manager of the Standard Four Tire Co., Keokuk, Iowa, has been studying trade conditions in the large cities in the Northwest.

Los Angeles

The Los Angeles Rubber Club, which was about to be organized, will delay formation for a short time. The original purpose was to get the local manufacturers and branch managers of eastern and midwestern rubber works to form a thoroughgoing organization to promote stable trade in the southwest metropolis and to correct various abuses that are known to exist. However, until it can be established on a "safe and sane" basis it will not be started.

The Goodyear (California) Tire & Rubber Co. is very busy completing the spring dating shipments of tires, and although the volume of orders this season has been unusually heavy, occasioned to a large extent by the anticipated January 1 price rise, the company expects to have the special orders filled by February 15. Production has kept up remarkably well, the mid-January daily "ticket" being for 3,500 tires and 4,000 tubes. W. C. State, chief mechanical engineer from the parent Goodyear plant at Akron, has been studying shop conditions at the Los Angeles plant.

A particularly strong demand for brake lining is reported by Fred. S. Wilson, Los Angeles representative of the Thermoid Rubber Co. An excellent trade is also being done in universal joints, tires, tubes, radiator, and other hose.

The Obituary Record

Organizer of Many Companies

HERBERT HILLS HEWITT, president of the Hewitt Rubber Co., Buffalo, New York, whose death on December 19 was noted in THE INDIA RUBBER WORLD, January 1, 1923, was born in Detroit, Michigan, January 19, 1855, and received a common school education there. Gifted with an inventive genius and a love of serious reading, he pursued his higher education alone and by intensive study in his spare time prepared himself for the important positions he was to occupy in the industrial world.

As a boy, in 1868, he went to work for the Michigan Central Railroad in Detroit, advancing through various capacities until in 1881 he became assistant general manager of the Pullman Co., Pullman, Illinois. Somewhat later he started a railway supply company in New York, N. Y., and organized the Hewitt Manufacturing Co., manufacturing journal bearings and brass castings for railroads at Chicago, Illinois. In 1893, at Buffalo, New York, he was one of the organizers of the Union Car Co., Depew, New York, and of the Buffalo Brass Co., also of Depew.

Now well started on his industrial career and the inventor of many railway appliances, he founded in 1895 the Magnus Co., by amalgamation of several brass plants in New Jersey and Depew. This firm is now the Magnus Metal Co. with several plants. In 1896 he founded the Reading Carwheel Co., Reading, Pennsylvania; in 1899, the St. Thomas Bronze Co., St. Thomas, Ontario, Canada; in 1901, the Canadian Bronze Co.; in 1914 the Hewitt Steel Corporation, Newark, New Jersey; and in 1916 the Metric Packing Co., Buffalo, New York.

Meanwhile in 1904 Mr. Hewitt organized the Hewitt Rubber Co., at Buffalo, New York, with a capital of $500,000, and erected a $300,000 factory to manufacture railway, fire and naval hose, rubber belting, and a general line of mechanical goods. Like his other enterprises this venture proved successful. The business grew rapidly and in 1917 the capital was increased to $1,000,000, automobile tires were added to the line of products, and a new factory was erected.

At the time of his death Mr. Hewitt was president of the Hewitt Rubber Co., Magnus Metal Co., Metric Packing Co., Reading Car Wheel Co., St. Thomas Brass Co., and a director of the Marine Trust Co. of Buffalo, New York.

His clubs included the Buffalo Club, Buffalo Athletic Club, and Buffalo Country Club at Buffalo, New York; New York Athletic Club, Bankers' Club, Lawyers' Club, New York Railroad Club, and the New York Club at New York, N. Y.; Chicago Club, Chicago Athletic Club, South Shore Country Club, and Union League Club at Chicago, Illinois; and the Duquesne Club of Pittsburgh, Pennsylvania. He was an enthusiastic turfman, keenly interested in both racing and breeding, his fine horses being well known in New York, Maryland, and Kentucky, where his colors were frequently shown.

A distinguished body of men from Buffalo and many other cities attended his impressive funeral service at St. John's Episcopal Church, an eloquent testimonial to his position in the industrial world, his high character and his many friendships. His death is a distinct loss mourned by all who knew him for the efficient, lovable, public spirited, philanthropic man he was.

He is survived by his widow, Mrs. Sarah Evelyn (Dutro) Hewitt, formerly of Chicago, Illinois.

Daughter of Charles Goodyear

Miss Clara Goodyear, daughter of Charles Goodyear, whose discoveries and inventions were the foundation for the world's rubber industries, died in her 83d year on December 20, at Great Barrington, Massachusetts. Interment was at the old Grove street Cemetery at New Haven, Connecticut, in the family plot, where rest the remains of Charles Goodyear and other members of his family.

A widowed sister, Mrs. Julia S. Colt, adopted as an infant by Charles Goodyear, survives Miss Goodyear and is living at Gould Farm near Great Barrington.

Sales Manager of the Seiberling Rubber Co.

Irving R. Bailey, vice-president and sales manager of the Seiberling Rubber Co., Barberton, Ohio, died at his home there January 9, aged 55 years. On New Year's day, while preparing for a vacation to California, he suffered an apoplectic stroke from which he never regained consciousness.

I. R. Bailey

A native of Sandstone, Michigan, and a brother of the late Charles R. Bailey, of Boston, Massachusetts, he had become one of the best known men in the rubber industry.

Some thirty-five years ago he began his career in the rubber business with his brother in Boston as Bailey Brothers, conducting a wholesale and retail business in all kinds of rubber goods. One of the pioneer salesmen of the trade, he was at various times identified with several leading companies. For over eight years he covered the Middle West, representing eastern manufacturers of waterproof goods and electrical supplies.

About twenty years ago Mr. Bailey went to the Diamond Rubber Co., Akron, Ohio, as sales manager of all mechanical goods. In ten years he built up a large business in these lines and established the firm's insulated wire, hard rubber, and footwear departments.

Following the merger of the Diamond and Goodrich organizations, he joined the Goodyear Tire & Rubber Co., in 1913, as sales manager of mechanical goods, and was even more successful in building up this firm's mechanical department. Two years later he was in charge of the department and in 1920 was promoted to assistant sales manager.

When the Goodyear reorganization came, in November, 1921, Mr. Bailey joined F. A. and C. W. Seiberling as vice-president and sales manager of the newly organized Seiberling Rubber Co. and was a live factor in the rapid upbuilding of its business.

Common sense selling and merchandising methods honestly and earnestly applied were the basis of his success. His governing maxim, expressed in his own words was: "Make men of those who make business; make salesmen and develop possibilities with the dealers."

Mr. Bailey belonged to numerous Masonic bodies in Akron and Cleveland, and was a member of the Akron City Club and Portage Country Club.

DENMARK BEGINS MANUFACTURE OF RUBBER SHOES

The first attempt at producing rubber shoes and galoshes in Denmark is being made by the Theilgaards Gummifabrik of Koge, a Danish company which for some years has been manufacturing tires and other rubber articles. In 1920 the imports into the country of rubber footwear amounted to about $600,000, and the organization hopes that at the present rate of production it will be able to supply one-third of Denmark's requirements along this particular line.—Commerce Reports.

The Rubber Trade in Great Britain

By Our Regular Correspondent

THE topic of the moment is the proposed confabulation between three selected members of the Rubber Growers' Association, the producers of raw rubber, and representatives of the American manufacturing industry, the users thereof. The invitation to New York was not accepted with great alacrity, but only on second thought, and it is clear from the correspondence in our financial press that many shareholders in plantation companies think that the friendly conference will result in their loss and America's gain. They see in the invitation something like that of the spider to the fly and think that the delegates from this side had better not walk into the parlor. There are others, however, who think that the delegates will prove too astute to sign away their birthright for a mess of pottage, so to speak, and they are desirous that the friendly invitation should be accepted.

Tire Manufacturers' Association Elects Officers

At the annual general meeting of the British Rubber Tyre Manufacturers' Association the general committee for the current year was chosen as follows: Lieutenant-Colonel Sealy Clarke, Spencer Moulton & Co., Limited, and Wood-Milne, Limited, chairman; E. Healey, W. & A. Bates, Limited, vice-chairman; F. W. Hinde, Avon India-Rubber Co., Limited; A. Johnstone, North British Rubber Co., Limited; L. V. Kenward, Dunlop Rubber Co., Limited; R. Moseley, David Moseley & Sons, Limited; G. A. Parsons, Palmer Tyre Co., Limited; J. Traxler, Henley's Tyre & Rubber Co., Limited.

The State of Trade

Although the cotton industry remains depressed there is something like a boom in iron and steel, and this will be accelerated by the news that the two capital ships talked about are to be commenced at once and this will absorb some of the unemployed labor. It is stated that the contracts for these vessels will benefit 500 firms, and rubber firms can hardly fail to be in the number. This will mean a much wanted fillip to the mechanical goods trade, which has long been languishing.

The proofing branch, which had quite a spurt of business in the autumn, is now experiencing a very quiet time, new orders being conspicuous by their absence. This, of course, reflects upon the garment makers whose stocks are accumulating, and this has necessitated some additions to the ranks of the unemployed.

To judge by some of the reports in the papers it might be thought that business was rapidly improving all around, but when one goes to the people actually concerned one does not find so much optimism. Take shipbuilding, for instance. Newspaper articles refer to large orders being placed for new tonnage at a time when most of our leading companies have vessels laid up. The real revival is not yet and it will probably be six months yet before we see a revival in shipbuilding and a consequent demand for certain classes of mechanical rubbers. At the same time, there is certainly an improvement already in the shipyards' business of the last two years, important orders having recently been placed.

In the iron and metallurgical industries generally, there is a decided spurt, and the mechanical rubber goods section must benefit. It is in the tire section that pessimism is most pronounced and those who are anxious to see a diminution in the imports of American tires are hoping that the well-known protectionist views of the new premier will lead to something being done, though having regard to certain election pledges this hope does not seem very well founded. The proofing branch, though it finished the year quietly, is looking forward with confidence to busier times, the inquiries from France, Scandinavia, and the Continent generally being numerous, while the business booked for South America is decidedly good.

The improved state of affairs shown in the reports of the Dunlop company and W. & A. Bates, Limited, this firm now having returned to dividend paying, is a good index of the turn in the tide of business.

The Institution of Rubber Industry

At the Manchester meeting held in December, Herbert N. Casson presided and Fordyce Jones read a paper entitled, "A Bigger and Better Rubber Sundries Trade." The paper was preceded by an address from the chairman, who is a propaganda expert. The rubber industry, he said, was at the crossroads and must either go back or go on. Such another crisis as existed now would not recur for many a generation to come. What, he asked, was Manchester going to do? Was Manchester going to be a tin kettle tied to Akron's tail or was Akron going to be a tin kettle tied to Manchester's tail? He had been to Akron and knew what they were up against and it would do them all good to go there and learn the condition of things that existed. They were, he went on, a wonderful people in Manchester and they worked hard, but he thought that Manchester had always done too much for the money she got in return. Advertising was a necessity; it was as important as machinery. The law of supply and demand did not really control production. It was the creation of a demand that was the vital thing. Efficient salesmanship and advertising would double the sales of the rubber trade in a single year.

Fordyce Jones in his paper also referred to the importance of advertising, to which, he said, little attention was paid by many manufacturers. Many of the British rubber trade catalogs were like antique literature and a really representative one was not to be obtained. He was going to blow his own trumpet, he said, in announcing the forthcoming issue of a £2,000 catalog printed on art paper, with half-tone blocks, new throughout.

The entire paper was of great interest but space prevents more than some brief references. Though the industry was founded in England, British goods in many cases were below the standard of those in other countries. British manufacturers who have been in the sundries business a long time and have inherited their plants and equipment had a hatred or fear of change and frequently had little knowledge of the developments which had taken place in other countries. It was a radical defect of the English mind to consider that everything that is English is the best. Many inventors seemed to think that any suggested new use for rubber was going to make them rich at once, but the fact was that very few inventions were really taken up by the public and frequently the dealers who marketed them were heavy losers.

Out of the hundreds of such ideas he had studied, few appeared likely to prove of lasting commercial value, and also many of the ideas were old and had been previously tried. The chief value of a new idea lay in a combination of utility and simplicity, examples of which were the Reliance screw-on metallic gas tube end and the rubber splash-guard for taps, for sales having run into millions. He had spent a considerable amount of time in investigating the possibilities of new lines, with no result, but he believed that there were many little gold mines in rubber sundries waiting just around the corner.

The chief deterrent to the possible and expected progress in the rubber sundries trade in this country could be defined in the little word "fear." Fear forebode failure as it expected the worst. The trade had not always considered the true requirements of the customer, though that was not such an easy matter as it appeared on the surface.

Mr. Jones then referred especially to the appearance and finish of goods. We had got to make things attractive to the æsthetic eye and he was glad to say that the day of crudely finished and chalky surface goods now appeared to be past. He had found among manufacturers a rather surprising ignorance of the best way of achieving the surface finishes which generally characterize American and Continental goods and he would give them a simple expedient. This was a water varnish made by boiling equal weights of bleached white shellac and borax in distilled water, allowing to settle, skimming and steaming and thinning down with distilled water to the required consistency. Such a polish was highly waterproof, but it could be improved with a little gum arabic. The appearance of goods was an important matter and there was much room for profitable research work and practical application.

In the ensuing discussion H. W. Hatton and others referred to the cost of molds. When the output of articles was only small, unless there was some security in the way of regular orders it was almost impossible to find capital for plant outlay. In the case of mechanicals the cost of molds was very high; with regard to moldings for pumps, an eighth of an inch or a sixteenth of an inch of difference in size of ram meant the making of another mold. Mr. Hatton referred to an expenditure of £400 during the war for making buttons, the value of which came to less than that sum and now he could not compete with the foreign buttons coming into the country. With regard to the water polish, he could assure the author that he had used it twenty years ago and was using it today in a slightly improved form.

Mr. Rothband inquired why British manufacturers did not turn out surgeons' gloves equal to the Akron product and the author, replying to this and other points, said that the matter was an interesting one, which he knew something about. The British manufacturer did not realize that he had to have hard rubber and that plantation rubber at the best was useless. Then the rubber must not be over-milled and the use of a solvent free from residue was important. There was further no amateur hand dipping and curing in America, where every operation was mechanical, the glove never being touched. The cure was by vapor.

One point against our success was the price of solvent, which was cheaper in Ohio. With regard to the cost of molds he might say that he did not ask manufacturers to supply; he supplied them himself, bought in the cheapest market. The rubber polish he mentioned might be an old one but his point was that it was not generally used until he had brought it to the notice of manufacturers. With respect to advertising, he had spent as much as £200 a week in prominent daily papers and it was a fiasco. Sundries were a different proposition from things such as tires, where it was necessary to keep a certain maker's name to the fore. He did not agree that the Britishers were doing their best; they were not, and they had a lot to learn from America in the rubber sundries trade.

At a meeting of the Institution, held in Birmingham, in December, the first in that city, the chair was taken by the president, Alex Johnstone, and D. B. Porritt, director of the Rubber Research Association, read a paper entitled, "Some Aspects of Science in the Rubber Industry." The Manchester Section is to have its first annual dinner on February 14, and Alex Johnstone is announced to preside.

Voluntary Liquidation

The old-established proofing firm of Abbott, Anderson & Abbott, having become involved in pecuniary difficulties, it was resolved, at a meeting of creditors held in London at the end of December, to go into voluntary liquidation, and the committee appointed to act was also empowered to consider schemes for the reconstruction of the company. The works are situated at Bow, in East London, and in recent years additional premises have been secured at Harpender, some miles to the north of London. Besides rubber proofing, the firm was in the oilskin branch, which hardly any of our proofers touch. From the figures given it would seem that the present trouble was mainly due to depreciation in stock. The loss in 1922 was £9,071, while in the previous year it was £17,617. It is to be hoped that a reconstruction will take place, the abilities of Messrs. Abbott as technical experts being generally recognized, and with the assistance of directors to look after the financial side of affairs the concern ought to assume its old prosperity.

The Peachey Process Co., Limited

At the second annual meeting, held in London, in December, the chairman, General Sir J. P. Hewett, M. P., stated that the sum paid up for preference and ordinary shares was £79,006. The activities of the company had been affected by the uncertain political and economic situation both at home and abroad and the manufacture of goods by the process had been delayed. An appeal had been entered against the decision of the United States Patent Office in favor of the American patent and this had caused delay in the use of the process in that country. They were anxious to get the process established in England and though delay had occurred there was reason to be confident that 1923 would see Peachey products manufactured in England on a large scale by substantial undertakings. The production of molded goods by the two-solution method had been perfected and it was expected that manufacture would begin in the spring.

STEVENSON PLAN CONDEMNED

In England there is wholesale condemnation of the restriction scheme, but the act is now a law of England and very great efforts will have to be put forward to obtain any revision or cancellation of the act. It is said that Pirelli of Italy and Michelin of France, cooperating with the English manufacturers and the Rubber Association of America, will petition their various governments to request the English Government to either withdraw entirely or to substantially amend the restriction scheme.

BRITISH DUNLOP COMPANY'S REHABILITATION

The recent report of the Dunlop Rubber Co., Limited, for the year ended August 31, 1921, shows net profit of considerably over £500,000 as compared with net loss of over £8,250,000 in the year previous. Improved conditions are also noted in the various divisions of the organization, the French company showing an increase in the cycle tire business of 50 per cent over the previous year with automobile tires 35 per cent higher for the corresponding period. The German company announces a 200 per cent increase in the sale of motor tubes, while the Indian, South African, South American, and colonial companies all show a slow, but growing tendency toward recovery. This tendency is especially pronounced in South America, where sales of solid tires have increased 29 per cent. The production of the Blue Dunlop Maxfli golf ball has also met with pronounced success, sales in Great Britain and Ireland having increased during the first five months of the current financial year by more than 350 per cent, as compared with the corresponding period in the previous year.

On the whole, prospects for the future are most encouraging, and still further improvements in organization are being planned for all of the company's departments.

TIRE PRICE INCREASES IN FRANCE AND BELGIUM

Retail tire prices in Belgium were increased by Michelin and Dunlop in December, the increase on inner tubes being 20 per cent and on casings 10 per cent. Effective Saturday, December 23, all the French tire companies increased retail prices in France. The price of inner tubes was raised 20 per cent and of casings 10 per cent.

Foreign Tariffs

Tire Import Duties as Levied by the West Indies and French and British Possessions in Central and South America

Rubber tires exported from the United States to the British and French colonies in Central and South America are subject to general customs rates, as given below, although our imports into the French possessions are, by special order, exempt from the increase in general rates adopted in 1921. British preferential duties apply to Canadian tires, as well as to products from most British territories. Canadian rubber goods are dutiable in French colonies under the minimum rate of duty, along with those from the United Kingdom, Belgium, Italy, and other countries having favored-nation treaties or status with France.

In most cases duties are stated in the local currency of the country of import with the exact equivalent in American dollars varying with the fluctuations in exchange. The par value is stated in each case; for specific transactions consult daily papers for current rate of exchange.

Antigua

	General ad valorem per cent	British Preferential ad valorem per cent
Articles not specified (including tires)	15	10

Home market value at time of exportation used as basis of duty.

Bahama Islands

Articles not specified (including tires)	15	10

Home market value at time of exportation used as basis of duty.

Barbados

Tariff No.			
ex21(f)	Parts of motor cars and motor vehicles	20	10
53	India rubber and gutta percha manufactures.	20	10
	Articles not specified	20	10

Home market value at time of exportation used as basis of duty.

Bermuda Islands

The use of motor cars and motorcycles is prohibited in the Bermuda Islands.

British Guiana

Manufactures of rubber	20	10

An additional surtax of 50 per cent calculated on the duty is added. Dutiable value is wholesale price in principal markets of country of exportation. Where the cost of goods imported from a foreign country is expressed in the currency of the exporting country, the value for customs purposes shall be calculated in pounds sterling, according to the current rate of exchange.

British Honduras

India rubber manufactures	20	10

Dutiable value is wholesale price in the principal markets of country of exportation.

Curaçao

Articles not specified (including tires) ..... *ad valorem*	3%

Valuation fixed yearly by colonial government.

Dominica

Manufactures of rubber not specified	15	10

Home market value at time of exportation used as basis of duty.

French Colonies (2)

	Duty per 100 net kilos		
	General	Intermediate	Minimum
Pneumatic tires, casings, inner tubes	600 fr.	225 fr.	150 fr.
Brake shoes, solid tires for vehicles, rough, further manufactured or finished	480 fr.	150 fr.	120 fr.

The French franc is equal to 80.193 at par. Duties are, however, paid to current exchange.

FRENCH GUIANA: Duties the same as above with the addition of an octroi duty of 5 per cent ad valorem. C. i. f. value port of entry used as basis of duty.

GUADELOUPE: Duties the same as above with the addition of an octroi duty of 6 per centum ad valorem. C. i. f. value port of entry used as basis of duty.

MARTINIQUE: Duty the same as above. C. i. f. value port of entry used as basis of duty.

Grenada

	General ad valorem per cent	British Preferential ad valorem per cent
Manufactures of rubber not specified	18¾	12½

Home market value at time of exportation used as basis of duty.

Jamaica

	General ad valorem per cent	British Perferential ad valorem per cent
Articles not specified (including tires)	20	15

Home market value at time of exportation used as basis of duty.

Montserrat

Articles not specified (including tires)	15	10

Home market value at time of exportation used as basis of duty.

St. Christopher and Nevis

Articles not specified (including tires)	15	10

Home market value at time of exportation used as basis of duty.

St. Lucia

54 India rubber manufactures	15	10

Home market value at time of exportation used as basis of duty.

St. Vincent

Manufactures of rubber	12½	10

There is in addition a surtax of 10 per cent on the duty. Home market value at time of exportation used as basis of duty.

Trinidad and Tobago

Articles not specified (including tires)	20	10

Home market value at time of exportation used as basis of duty.

Virgin Islands (British)

Articles not specified (including tires)	12	8

Home market value at time of exportation used as basis of duty.

Note—The metric kilo is equivalent to 2.2046 pounds, and the ton to 2,204.6 pounds.

The Rubber Trade in Germany

By Our Regular Correspondent

The war put transportation for freight and passenger out of joint in Germany, and this has not improved by any means. The possibilities of express auto trucks as an aid to present transportation conditions are being discussed in the German press. The extended use of trucks would give an impetus to home industry both in the manufacture of trucks and of pneumatic tires, and at the same time it would help to make up for the slowing down of foreign business which Germany is beginning to feel now.

High Freight Rates and Old Rubber

Efforts are being made to reduce the freight rates on old rubber, which are so high that in many cases they exceed the value of the rubber. As a result the waste rubber trade has practically ceased to be active; only tubes, tires and the like are now being collected, and in a limited degree. The reclaimer is consequently in a precarious condition.

General Conditions

Hitherto, as a rule, every fall of the mark was accompanied by active buying. Recently, however, this feature has been absent. Apparently the purchasing power of the German public is diminishing, and this in conjunction with decreased interest from abroad is causing a good deal of anxiety.

Reports from the different rubber manufacturing centers indicate that some of the factories in the Thuringian district, around Harburg, in Bremen, and in the Rheinland are in an unsatisfactory condition. One factory in Dusseldorf has cut the working hours to 24 a week. In Hannover, there is a serious fuel shortage. One factory in Cologne had to shut down because of lack of raw material. Increased unemployment is reported from Gotha.

Feeling against the French as the chief cause of the German economical plight is growing more and more bitter; and while it is conceded that the rest of the allies are not so bad, yet it is felt that their policy is no more open and honest than that of France.

Rubber Chemist Honored

Dr. Fritz Frank, partner in the well-known laboratory, Dr. R. Henriques Nachfolger, has been nominated honorary professor at the Technische Hochschule, Berlin-Charlottenburg. Professor Frank, who together with Dr. Ed. Marckwald, took over the above laboratory in 1901 when Dr. Henriques died, has for many years been well known in rubber research as an investigator of the first

rank. His work in the chemistry of mineral oil during the war was rewarded with the Iron Cross with white ribbon.

New Goods

The Pneumette is a new arch support, which consists of an aluminum sole with a one-piece rubber cushion on the upper side. The cushion can be inflated to the desired pressure by a tiny air pump. The inventor is Dr. Karl Schmidt who received technical advice and assistance from the Firma Kreuzversand, Munich.

The belting manufacturers, G. Rothmund & Co., Hamburg, are producing a new type of belting the Dukainterwoven rubber, which has a core of the finest cotton and is impregnated with rubber according to a special process. The resistance to tearing is said to be 460 kilos for a belt 72 millimeters wide and 6.4 millimeters thick, as compared with 252 kilos for a rubber belt of the same dimensions.

The Rubber Industry in the Far East

By Our Regular Correspondent

Malaya

RESTRICTION has been in force a month now and there is a tendency on the part of the local press to look at the easy side of the matter and to proclaim that it is attaining its object. Considering that rubber has risen within the last few weeks to 1*s.* 1½*d.* a pound—just 1½*d* less than the 1*s.* 3*d.* aimed at—optimism seems to be justified. However, there are those who refuse to see anything good in restriction and declare that rubber would have risen anyway because business was improving in America and that rubber imports during 1922 were substantially above the estimate made in the dark days of 1921.

The American Bugaboo

Incidentally the American buyer is given many different rôles by the expert word-conjuror out here. Now he is a bugaboo scaring producers into restriction and then again he is trying to scare them out of it. Opposing parties use him to prove their peculiar points of view. Just at present he is the spook that intrudes on the happy family enjoying the rosy prospects of restriction, for the big question is: "What is the American going to do? What means will he employ to get even with us?"

The *Straits Echo* is not afraid of spooks, not even of the American brand, and tackles it as follows:

The conclusion is drawn that restriction will cause the Americans to desert a market liable to extraneous influences and to rely upon their own resources. It must be pointed out that America's premier position as a rubber consumer and manufacturer is largely due to conditions which are not likely to continue indefinitely. She came very late into the great war and it affected her but little, and she has been able—since 1914—to exploit the markets which the European nations have been obliged to neglect. As Europe revives, so will its demand for rubber, and while the United States will probably continue to be the largest consumer, the figure of 75 per cent is pretty certain to be reduced.

The *Straits Echo* is not afraid that America will prefer to extend plantations in the Dutch colonies, for if Malaya has restriction, the Dutch have prohibitive taxes. Besides, it has faith in the fair-mindedness of Americans, who, it supposes, would not object to Malaya trying to get a reasonable price for rubber.

The *Malayan Tin & Rubber Journal* shares this faith in American reasonableness, as is evident from a discussion in a leader of the American point of view as reflected in the October issue of THE INDIA RUBBER WORLD.

The Other Side of the Story

In spite of the rise in rubber, not every British planter in Malaya is satisfied with restriction. There are many who really approve of restriction but can show a hundred different reasons why they should be exempted. A second class grumbles because it was possible to make both ends meet before restriction, whereas now heavy losses are being incurred. A third class becomes incoherent over its grievances and complains that estates' rent is too high because the land has been impoverished by excessive tapioca planting, and then denounces the whole scheme because the yields from this same estate are much higher than those given in the Duncan rate.

Flaws in the Restriction Scheme

The favorite pastime at present is to dissect the restriction scheme and lay bare all its faults and conjure up the possibilities that might develop therefrom. Thus the 1919-1920 period fixed as basis for calculations is found to be unfair in many ways. In the case of older rubber that was giving high yields in the basic period but had since passed maximum productivity and was really giving a smaller crop, restriction would amount to only 25 to 30 per cent; whereas, for young rubber, where yields had increased since 1919-1920, the rate would be much more than the 40 per cent aimed at.

The fact that only exports and not crops are legally restricted has suggested that estates, especially the big ones, will attempt to hoard rubber. A good deal of so-called hoarding may be due to a special system of tapping where the aim is to cut down expenses while complying with the demands made by the restriction law.

What is regarded as more serious than hoarding is that the rules do not prevent an estate from selling its surplus crop to a local buyer, without coupons. It is evident that if large estates can find local buyers, they can produce as much rubber as they like and still enjoy the benefits of restriction. Those who would suffer would be the very large number of small holders who would be practically squeezed out of existence, as local buyers would probably prefer to buy the surplus estate rubber than the *kampong* rubber.

Bootlegging Export Coupons

That the large estates will take advantage of this loophole is probable. According to the rulings, a dealer must show the necessary coupons from the producer when exporting. The coupons, however, are transferable, so that a dealer can buy them from the small holder, and there is nothing to prevent a large estate doing the same. The prospect of doing nothing at all for say 20 cents a pound of the allotted amount to be produced would no doubt be satisfactory to the small Malay holder; and it would certainly pay the big owner to give 20 cents (Straits' currency) per pound on excess rubber over 60 per cent and up to 100 per cent and higher instead of the 42 cents leviable by the government on such excess rubber. These evasions still have the merit of being somewhat within the law.

Small Estate Holders

The small holders of estates of under 25 acres are particularly hard hit by the restriction scheme. According to the Duncan rates, a basis of 320 pounds per acre for these small gardens would allow the owners about 192 pounds per acre per annum which would not yield enough income for the people to keep them from starvation and ruin.

The fact that big estates may produce as much as they like but are only restricted as regards exports, while the native holder is allowed to produce only 60 per cent of 320 pounds an acre, has created the feeling that the Stevenson plan has been introduced for the purpose of aiding the big estates and crushing the little ones.

What will be done to protect the small planters is not yet known, but it is known that the government does not wish the natives to suffer unduly on account of restriction, and a committee has been appointed to investigate their condition.

Ceylon

In Ceylon, as in Malaya, the small holders have been complaining a good deal against the restriction scheme. First, the 320 pounds per acre, allowed where the age of estates is unknown are considered wholly inadequate. The small holders asked that estates under 15 acres should be exempted from restriction altogether, and pointed out that the small owner is allowed to dispose of his exportable rubber for a given month in one lot only and that this would cause suffering amongst the poor people. The Board intimated that if experience showed it was necessary four coupons a month might be allowed against the monthly certificate.

Maximum Exports for Big Estates

As some planters are not quite clear as to how they are to regulate their production, a statement to elucidate the matter was issued.

Restricted rubber, it is explained, is all rubber harvested after October 31, 1922. Each estate, on handing in its returns to the controller, will receive a monthly certificate stating the exportable maximum in pounds of rubber for that month. It will be allowed to export up to the end of November, 1922, the quantity allowed for that month; up to the end of December, 1922, the quantities allowed for November and December; up to the end of January, 1923, the amounts allowed for November, December, 1922, and January, 1923, and so on. Should these amounts be exceeded, the whole of the restricted rubber exported by that estate since November 1, 1922, becomes liable automatically and immediately for paying of excess duty.

After the end of each month, or earlier if the monthly allowance of rubber is already sold or exported, the monthly certificate for each estate will be returned to the Controller, who will then issue a monthly certificate for the ensuing month which will include the balance from previous month's certificate not yet sold or exported.

Netherlands East Indies

Little news about restriction has appeared in the press. However, from what one can learn, opinion has not substantially differed on the advisability of restriction. The *Nederlandsch-Indisch Rubbertijdschrift* discusses the attitude of the British rubber manufacturers and their objections to the Stevenson scheme, and on the whole it is inclined to agree with them.

It further suggests that the whole plan may prove to have been superfluous, for at the rate that America has been importing, her total imports of rubber must be about 280,000 tons for 1922, which is approximately equal to the world-consumption of rubber in 1921.

A danger is seen in the possibility that the price for rubber may become abnormally high. Of course it rejoices in the increasing prices, which make it possible for planters to work without loss. "But," it inquires, "as the average cost of production is around 40 gilder cents per half kilo (1 gilder equals $0.40; a kilo is 2.2 pounds), would it not be too much of a good thing if rubber went up to a gilder per half kilo? What crop gives a profit of more than 100 per cent under normal circumstances?"

The Dutch periodical does not think it advisable to try to preserve concerns that otherwise would sink because of high costs due to poor management, unfavorable site, or poor soil. A market price that leaves a reasonable profit for the average estate is welcome.

On the other hand, it is inclined to treat rather skeptically the enthusiasm of the *Straits Times* over the immediate effects of the restriction scheme, which the latter paper says amounts to $5,000,000 (Straits currency) gained right away. The Dutch paper foresees attempts at evasion of restriction and thinks that increased costs of production and the duty will do much to reduce the profits. It is of opinion that it is practically impossible for a scheme of restriction to work equitably and that there are sure to be many difficulties.

Uncertainties in Bud Grafting

Dr. W. H. Arisz lectured at Banjoewangi recently on the advantages and disadvantages of bud grafting. He pointed out that the first requisite for successful bud grafting was that the stock on which the bud was to be grafted should come from seed of high yielding and robust trees in a state of vigorous growth. Also, budding material from a great number of high yielding mother trees should be used and planted promiscuously; budded stock, in which the buds are from several different trees, should be planted all together in one plantation. The reason is that apparently the scions of high yielders in their turn become high yielders when grafted, but this is not certain until tapping has commenced. When the buds are all from a first rate producer, there is a great risk, because the vegetative offspring are not always as good yielders as the mother trees.

The safest way, therefore, is to use budding material from a number of excellent trees.

Trees from budded stock yield much more than trees from ordinary seed in the early tapping years, but later on the difference tends to diminish.

However, in later years the ratio will decrease, for during its first tapping year the yield from an ordinary plantation is given by a comparatively small number of trees. This amount increases as the years go by and judicious thinning out helps too. In the case of the budded trees, the yield from all the trees is relatively high from the very outset.

In the case of budded trees as well as of ordinary trees, soil, height above sea level, and rainfall are important factors in the matter of outputs.

Thus it is seen that in time trees raised from selected seed may give as good crops as budded trees.

Finally the writer advises planters not to use budding material from their own trees only, but to get material from many other estates, which would help to improve the quality of the new plantations.

Death of Dr. Th. Wurth

News has been received of the death on November 10, of Dr. Th. Wurth, director of the Malang experiment station. Dr. Wurth came out to Java in 1905, and in the years he spent first at the Salatiga Experiment Station and then as director of Malang, he proved himself to be a conscientious, thorough-going investigator. From all parts of Java testimonies of sympathy and interest were received, showing how greatly he was esteemed both for his work and his personality.

India

In South India, interest in bud grafting is growing. Owing to the devitalization of the Hevea shoots due to secondary leaf fall, it is practically impossible to detach the bud bark from the branches of the trees, in the condition necessary for successful grafting. However, a way out of the difficulty has been found by using the new and adequately developed shoots arising after a Hevea tree has been pruned or pollarded.

Mr. Ashplant, the government rubber mycologist, has studied the whole matter thoroughly and has come to the conclusion that if proper care in selection of bud material and of stock is observed, budding can be made a success in South India also.

Recent Patents Relating to Rubber

The United States

Issued* December 5, 1922

NO. 1,437,435 Eye washing device. F. Maier, Elizabeth, N. Y.
1,437,454 Valve for air tubes. G. W. Sheeley, Frederick, Md.
1,437,504 Tire pressure gage. C. O. Evenson, Valders, Wis.
1,437,516 Tire pressure gage. W. P. Hammond, Passaic, N. J., assignor to A. Schrader's Son, Inc., New York, N. Y. (Renewed November 24, 1917.)
1,437,521 Power operated windshield cleaner. H. Hueber, assignor by mesne assignments to Polk-Hueber Co.—both of Seattle, Wash.
1,437,572 Bottle stopper. J. Vons, Lakewood, assignor of ½ to G. Johnson, Cleveland—both in Ohio.
1,437,635 Door silencer. G. R. Damiani, Chicago, Ill.
1,437,652 Hot water bottle. L. G. Hammond, Columbus, Ohio.
1,437,711 Printing device. W. S. Bing, San Diego, Calif.
1,437,922 Door buffer. L. Taffe, Chicago, Ill.
1,437,926 Hose supporter button. D. G. Butts, assignor to Ivory Garter Co.—both of New Orleans, La.
1,437,986 Storage battery. S. M. Meyer and W. James, Brooklyn, assignors to Magno Storage Battery Corporation, New York—both in New York.
1,438,015 Pneumatic tire. H. S. Blynt, Yale, Okla.
1,438,062 Shower bath stand. D. Semel, Highland Park, Mich.
1,438,070 Tire construction. L. Turan, Brooklyn, N. Y.
1,438,081 Tire valve. M. Allen, Los Angeles, Calif.
1,438,106 Telephone set. F. E. Gallagher, Santa Clara, Calif.
1,438,141 Elastic fabric in hair dressing device. F. A. Schmidt, St. Louis, Mo. (Renewed October 26, 1922.)
1,438,143 Heel. G. C. Seymour, Brooklyn, N. Y.
1,438,161 Balloon valve. H. J. Zimmerman, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

Issued* December 12, 1922

1,438,226 Football. A. T. Edwards, assignor to Jabez Cliff & Co., Limited—both of Walsall, England.
1,438,256 Inner tube. J. B. Mundell, Chicago, Ill.
1,438,257 Multiple cell inner tube. R. B. Mundell, Chicago, Ill.
1,438,284 Tire valve. F. Zemla, Hamtramck, Mich.
1,438,370 Belting and process of manufacture. G. R. Fisher, Denver, Colo., assignor, by direct and mesne assignments, to The Master Cord Belt Co., a Colorado corporation.
1,438,485 Rubber shaving brush. M. L. Goldberg, Brooklyn, N. Y.
1,438,515 Pocket implement. E. Blümner, Berlin-Wilmersdorf, Germany.
1,438,604 Airless tire. R. N. McClure, Los Angeles, Calif.
1,438,657 Tire boot. L. E. Mills, Bryan, Ohio.
1,438,658 Cushion wheel. J. J. Morand, assignor to Morand Cushion Wheel Co.—both of Chicago, Ill.
1,438,663 Tire comprising metallic fabric. M. Roderick, Missoula, Mont.
1,438,668 Rubber bottle tap. A. J. Smith, Quitman, Ga.
1,438,775 Removable heel. G. Milse, Bremen, Germany, assignor to E. Zimmerman, New York, N. Y.
1,438,798 Tire and engine compression gage. H. A. Walker, San Antonio, Tex.
1,438,836 Sectional rim. W. F. Laing, Kansas City, Mo.
1,438,883 Pneumatic crutch tip. O. A. Youngren, New York, N. Y.
1,438,911 Corset truss. M. Gebhardt, Scotia, Nebr.

Issued* December 19, 1922

1,439,007 Automobile door buffer. J. Ledwinka, assignor to Edward G. Budd Manufacturing Co.—both of Philadelphia, Pa.
1,439,037 Wheel and demountable rim. J. G. Swain, assignor to The Firestone Steel Products Co.—both of Akron, Ohio.
1,439,065 Pedal pad. J. C. Burlock, New York, N. Y.
1,439,104 Rubber tip for French heels. E. B. Heltwitz, Wausau, Wis.
1,439,165 Elastic garment support. M. L. Hawks, New York, N. Y.
1,439,256 Tire rim. D. Moriarty, Oakland, Calif.
1,439,275 Sectional rim. R. Stock, Sandusky, Ohio.
1,439,300 Valve dust cap. D. B. Dreese, Larned, Kans.
1,439,329 Container. W. J. Randolph, assignor to I. M. Randolph—both of Buffalo, N. Y.
1,439,338 Golf exercising device. H. W. Smith, Akron, Ohio.
1,439,339 Golf practicing and exercising device. H. W. Smith, Akron, Ohio.
1,439,424 Tire securing means. K. Knudsen, Grand Rapids, Mich., assignor to Electric Wheel Co., Associates, Springfield, Mass. (Original application divided.)
1,439,452 Pneumatic gasket. F. M. Shaw, Chicago, Ill.
1,439,456 Football and the like. F. A. Turner, London, England.
1,439,527 Metallic tire overshoe. G. Moore, Oakland, Calif.
1,439,547 Cushion heel. J. E. Grosjean, Lima, Ohio.
1,439,564 Composite heel. H. J. Lucier, Stoughton, Mass.
1,439,590 Tire armor. A. Weisberg, Brooklyn, N. Y.
1,439,600 Detachable heel. H. Bonawitz, Brooklyn, N. Y.
1,439,617 Pneumatic hub. T. C. Dobbins, Los Angeles, Calif., and D. H. Roby, Denver, Colo.
1,439,649 Diaper. J. Stein, New York, N. Y.
1,439,662 Syringe. C. C. Eppleman and W. E. Callahan, Gloucester, N. J.

Issued* December 26, 1922

1,439,734 Powder puff. V. Guinzburg, assignor to I. B. Kleinert Rubber Co.—both of New York, N. Y.
1,439,746 Windshield wiper. W. H. Minier, assignor to The K-M Manufacturing Co.—both of Toledo, Ohio.
1,439,757 Revolving heel. F. Redman, New York, N. Y.
1,439,758 Revolving heel. F. Redman, New York, N. Y.
1,439,941 Rim for vehicle wheels. R. S. Bryant, assignor by mesne assignments, to The Standard Parts Co.—both of Cleveland, Ohio. (Renewed January 21, 1918.)
1,439,943 Collapsible rim. J. E. Castle, assignor of ½ to J. C. Jones—both of Ridge Farm, Ill.
1,439,996 Sponge rubber support for vacuum tubes. L. F. Bird, Seattle, Wash.
1,440,060 Resilient heel. T. M. Conger, Elyria, Ohio.
1,440,121 Knee protector. D. F. Abrahamson, Chicago, Ill.
1,440,157 Elastic reducing band. T. Lawton, New York, N. Y.
1,440,190 Demountable rim construction. G. S. Webb, Aurora, Ill.
1,440,235 Nursing bottle. L. H. Orson, Cleveland, Ohio.
1,440,290 Demountable rim. C. A. Hardy, Berlin Heights, Ohio.
1,440,337 Protector for shoes. E. M. Bush and P. Brown, Haverstraw, N. Y.
1,440,349 Jar cover and ring. A. Foltz, Lambertville, N. J.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted November 21, 1922

226,170 Tire gage. H. P. Kraft, Ridgewood, N. J., U. S. A.
226,266 Water bottle stopper. The A. Schrader's Son, Inc., New York City, assignee of H. P. Kraft, Ridgewood, N. J.—both in the U. S. A.
226,355 Foot attachment for ladders. J. A. Aksdal, Seattle, Wash., U. S. A.
226,369 Clencher rim. J. Chofko, Yonkers, N. Y., U. S. A.
226,391 Ink well and stand. J. Havassy, Miami, Ariz., U. S. A.
226,402 Diver's suit. P. Konopski, Toronto, Ontario.
226,416 Dust pan. A. McCallum, Ottawa, Ontario.

Granted November 28, 1922

226,515 Inflating valve. R. N. Bressler, New York City, U. S. A.
226,571 Detachable rubber heel. G. J. Winter, Buffalo, N. Y., U. S. A.

Reissues

226,703 Automobile mat. The Gutta Percha & Rubber, Limited, assignee of J. H. S. Kerr—both of Toronto, Ontario. Original No. 211,242, dated May 3, 1921.

Granted December 5, 1922

226,723 Hose support. H. A. Austin, New York City, U. S. A.
226,804 Blow-out shoe. L. H. Voss, Detroit, Mich., U. S. A.
226,862 Demountable rim and tire carrier. J. B. Richards, A. D. and W. H. Westman, co-inventors—all of Chatham, Ontario.
226,878 Manufacture of casings for pneumatic tires. The Dunlop Rubber Co., Limited, London, assignee of W. H. Paull, Birmingham, Warwick—both in England.
226,884 Puncture proof inner tube. The McWade Tire & Rubber Co., assignee of J. J. Shoemaker, both of Garrettsville, and C. C. Cox, Niles—all in Ohio, U. S. A.
226,906 Collapsible rim. J. M. Meredith, Jr., Norfolk, Va., U. S. A.

The United Kingdom

Published December 6, 1922

187,019 Tire valves. W. E. Rowsome, 12 Moira street, West Belleville, Ontario, Canada.
187,064 Air Cushions. A. V. Alexander, 13a Earl's Court Square, London.
187,112 Golf ball cleaner. W. M. Jenkins, 11 Great Marlborough street, Regent street, London.
187,136 Tire protector. E. Birkinshaw, 46 Lamartine street, Nottingham.
187,157 Baby comforters. W. H. Griffiths, 13 Bridge street, Hereford.
187,160 Wheel tires. W. Korman, Moline, Manitoba, Canada.

Chemical Patents will be found on page 299; Machinery and Process Patents on pages 303-304

187,183 Rubber cover for heating bags. L. J. Wertheimer, 859 Seventh avenue, New York City, U. S. A.

Published December 13, 1922

187,272 Tire valve. A. Schrader's Son, Inc., 783 Atlantic avenue, Brooklyn, and M. C. Schweinert, 42 Riverside Drive, New York—both in New York, U. S. A.

187,294 Pneumatic horseshoe pad. J. W. Edwards, 57 Cecil street, Whitworth Park, Manchester.

187,352 Rubber studs for horse shoes. W. T. Pace, Ashbury Cottage, Earlswood, Hockley Heath, near Birmingham.

187,416 Motorcycle handle-bar muff. A. G. Barrett, and H. H. Burton, Post Office Place, Leicester.

187,443 Tennis racket and cricket bat handle. A. D. and L. Ingram, London India Rubber Works, Chapman Road, Hackney Wick, London.

187,456 Non-skid horseshoe. S. A. Methuen, 7 Woodgrange avenue, Ealing Common, London.

187,513 Soles and heels for golf shoes. Wood-Milne, Limited, and E. P. Still, 2 Central Buildings, Westminster.

187,518 Rubber sleeve for mops. M. Veeck, 141 Maple avenue, West Manayunk, and T. N. Hayes, 1403 Lenox avenue, Philadelphia—both in Pa., U. S. A.

187,523 Rubber cap for carpet sweeper handles. Entwisle & Kenyon, Limited, Ewbank Works, and E. Kenyon, Prospect House—both in Accrington, Lancashire.

Published December 20, 1922

187,695 Garter. S. R. Riley, 182 Walford Road, and H. H. Boucher, 141 Durham Road—both in Sparkhil, Birmingham.

187,710 Apron with elastic band. T. Hardy, 68 Alexandra Road, Moss Side, Manchester.

187,760 Syringe. G. H. Froggatt, 136 Carver street, Moorehead, Sheffield.

187,802 Automobile mat. R. W. Gean, 219 Goswell Road, London.

187,828 Airplane shock-absorber. H. Bolas, and G. G. Parnall, Coliseum Works, Park Row, Bristol.

187,835 Rubber paving blocks. J. H. de W. Waller, 115 Grafton street, Dublin, Ireland.

187,865 Corsets. D. Kops, 120 East 16th street, New York City, U. S. A.

187,875 Rubber disk shock absorber. W. Moon, 2 Belgrave Crescent, W. G. Martin, and North British Rubber Co., Limited, Castle Mills, Fountainbridge—both in Edinburgh, Scotland.

187,876 Rims. W. Dukes and Warland Dual Rim Co., Limited, Lythall's Lane, Coventry.

187,900 Rubber closure for bottles. E. Burnet, 93 Harley street, London.

187,920 Hat cover. J. B. Een, 5 Jernbanetrovet, Christiania, Norway.

187,924 Golfer's raincoat. H. Sommerlad, 3 Wellington Road, Watford.

187,955 Tire bead wire. International Bead Wire Corporation, 165 Broadway, New York City, assignee of A. C. Pratt, Deep River, Conn.—both in the U. S. A. (Not yet accepted.)

Published December 29, 1922

188,017 Pneumatic hose collar. B. Burton, 23 Cae Gorlan street, Abercarn, Monmouthshire.

188,122 Football valve. F. Meyer, 249 Market street, Eastleigh, Hampshire.

188,212 Wheel tires. T. Monkhouse, 199 Abbey Hills Road, Glodwick, and C. A. Wild, 43 Hardy street—both in Oldham, Lancashire.

188,225 Shoe for animals. H. S. Taylor, 27 Market street, Church, near Accrington, Lancashire.

188,258 Life saving gasket. F. van der Pol, 82a Queen street, Cheapside, London.

188,265 Tobacco pouch. E. H. Livermore, 37 Basinghall street, and C. Hogwood, 122 Lea Bridge Road, Clapton—both in London.

188,277 Protectors for heels and soles. I. A. Bayley and D. Power, North Sydney, Nova Scotia, Canada.

188,286 Semi-pneumatic tire. F. H. Wilbur, 314 Water street, Binghamton, New York, U. S. A.

188,288 Collapsible rim. H. D. and J. M. F. Craven, 28 Nelson street Rotherham, Yorkshire.

188,303 Table games. H. R. Murphy, 27 Greeves street, St. Kilda, and H. B. Murphy, 253 Waterdale Road, Ivanhoe—both in Victoria, Australia. (Not yet accepted.)

188,306 Heel protector. W. Anderson, 72 Brunswick Road, East Brunswick, near Melbourne, Australia. (Not yet accepted.)

188,314 Mops. V. J. B. Gattelet, 129 Rue Bugeaud, Lyons, France. (Not yet accepted.)

188,318 Fountain pen. P. Thibaud, 13 Rue des Fosses, Lille, France. (Not yet accepted.)

188,341 Tire valve dust cap. A. Schrader's Son, Inc., 470 Vanderbilt avenue, Brooklyn, assignee of E. van A. Myers, 82 Evergreen Place, East Orange, N. J.—both in the U. S. A. (Not yet accepted.)

Published December 30, 1922

188,386 Elastic webbing in garment suspenders. A. Botteschi, 7 Cadogan street, Chelsea, London.

188,403 Combined vehicle body and bath tub. W. H. Dunkley, Dunkambulator Works, Jamaica Row, Birmingham.

188,491 Football shoe cap. A. Ducat, 31 Fulham Road, and P. Surridge, 210 Borough High street—both in London.

188,501 Golf bag cap. A. L. Hillman and J. & A. Hillman, Limited, Castle Leather Works, Trindle Road, Dudley.

188,537 Demountable rim. A. A. Liardet, Vulcan Iron Works, Thornton Road, Bradford, and F. W. Berk, 22 Studley Road, Harrogate—both in Yorkshire.

188,568 Horseshoe tread. W. H. Ingram, Yew Tree House, Over Whitacre, near Coleshill, Warwickshire.

188,590 Life saving suit. G. Senatore, 131 Harrison street, Brooklyn, New York, U. S. A.

New Zealand

Published November 16, 1922

48,478 Heel. W. Anderson, 72 Brunswick Road, East Brunswick, near Melbourne, Vic.

48,615 Sectional inner tube. McLeroth Pneumatic Tire Syndicate, Limited, Pinner's Hall, Austin Friars, assignee of T. B. McLeroth, "Eastburn," The Crescent, Hadley Wood—both in London, England.

Germany

Patents Issued, with Dates of Issue

367,717 (February 18, 1922) Rupture band. Adolf Zekert, Schillerstrasse 8, Wandsbek.

Design Patents Issued, with Dates of Issue

830,977 (October 23,1922) Inflatable rubber toy with design in relief. Max Manfred v. d. Heyden, Leipzigerstrasse 119-120, Berlin.

831,150 (October 21, 1922) Rubber heel with insert. Rheinische Fabrikbedarf-Industrie Hubert Kreuels, jr., Krefeld.

831,156 (October 24, 1922) Rupture band without spring. Friedrich Wilhelm Simon, Elkenbachstrasse 25, Frankfurt-am-Main.

831,157 (October 24, 1922) Springless rupture band. Friedrich Wilhelm Simon, Elkenbachstrasse 25, Frankfurt-am-Main.

831,238 (October 5, 1922) Tip for rubber soles. Heinrich Hunger & Co., Köln-Deutz.

831,261 (December 23, 1920) Exchangeable heel. Dankwart-Recke Welt-Gummiabsatz, G. m. b. H., Berlin.

831,393 (October 26, 1922) Rupture band. Friedrich Wilhelm Simon, Elkenbachstrasse, Frankfurt-am-Main.

831,498 (October 28, 1922) Rubber air cushion for bicycle saddle. Fritz Buntrock, Mauerstrasse 6, Duisburg-Meiderich.

831,682 (October 19, 1922) Rubber heel. Bergerstrasse 21, Düsseldorf.

831,696 (November 1, 1922) Nail head for rubber heels and soles. Gustav Adolf Nowak, Dom Pedrostrasse 21, Munich.

831,864 (August 24, 1921) Protective cover for tires. Ernst Buggel, Juiststrasse 13, Bremen.

831,944 (October 26, 1922) Rubber sheet with reinforced edge. Fritz Thiele, Springerstrasse 9, Leipzig.

831,945 (October 26, 1922) Rubber sheet with reinforced edge. Fritz Thiele, Springerstrasse 9, Leipzig.

831,946 (October 26, 1922) Rubber sheet with reinforced edge. Fritz Thiele, Springerstrasse 9, Leipzig.

832,028 (October 10, 1922) Bicycle cover protector of rubber with vulcanized fabric inserts. Gottfried Steven, Gustav-Freytagstrasse 19, Dresden-Blasewitz.

832,539 (November 6, 1922) Seamless, dipped, small rubber valve for nipple. Ruhrtaler Gummiwarenfabrik, G. m. b. H., Hattingen, Ruhr.

Trade Marks

United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted November 28, 1922, Act of March 19, 1920, Section 1 (b)

162,015 "HOLYOKE"—cord tires. New England Tire & Rubber Co., Holyoke, Mass.

162,016 PINEHURST—shoes of leather, rubber, and fabric, and combinations. Norman & Bennett, Inc., Boston, Mass.

Granted December 5, 1922, Act of February 20, 1922

162,038 KARLODE—shoes of leather, canvas, rubber, or fabric. Leonard R. Carley, Watertown, Conn.

162,063 Drawing of fountain pen, lined to indicate that handle of filling pump is red. Dunn Pen Co., Inc., New York, N. Y.

162,089 Johansen's Feeture-Arch. White letters on black oval background; at top a scroll with PATENTED in black letters; at bottom a longer scroll with the words FLEXIBLE RIGID SHANK. Johansen Brothers Shoe Co., St. Louis, Mo.

162,099 PLAYPROOF—shoes of leather, rubber, canvas, and combinations. A. I. Namm & Son, Inc., Brooklyn, N. Y.

162,103 TIGER—rubber heels. Panther Rubber Manufacturing Co., Stoughton, Mass.

162,104 PANCORD—rubber heels. Panther Rubber Manufacturing Co., Stoughton, Mass.

162,105 PANCO—rubber soles and taps. Panther Rubber Manufacturing Co., Stoughton, Mass.

162,106 LYNX—rubber heels. Panther Rubber Manufacturing Co., Stoughton, Mass.

Act of March 19, 1920, Section 1 (b)

162,160 BACK-TO-NATURE, on background outlined to represent the sole of a shoe—misses' and children's shoes and boots of leather, rubber, canvas, and combinations. Jordan Marsh Co., Boston, Mass.

162,175 UNITED—rubber heels, Taunton Rubber Co., Taunton, Mass.

Granted December 12, 1922, Act of February 20, 1905

162,320 SAN-O-LITE—dental cement. Frank L. Molyneux, Painesville, Ohio.

Act of March 19, 1920, Section 1 (b)

162,425 SURE-STIK—sheet rubber patches. J. C. Caldwell, Pittsburgh, Pa.

162,429 BESTUVALL, on double lined diamond shaped background—infants' rubber nipples. The Dykema Co., Pittsburgh, Pa.

Act of February 20, 1905

162,482 AIR-TITES—tire valves. Chicago Nipple Manufacturing Co., of California, Los Angeles, Calif.

162,521 Within a circle the word HOLMAC above, curved, and O-O below—golf balls. Holmac, Inc., New York, N. Y.

162,531 UNBREAKABLE, with diamond shaped black background for middle portion of word, a white bar breaking the three middle letters—fountain pens. Le Boeuf Fountain Pen Co., Inc., Springfield, Mass.

Granted December 26, 1922, Act of February 20, 1905

162,803 "SILVER GIRL"—binding tapes, elastic webbing, dress belting. Kranish Brothers, New York, N. Y.

162,888 PATRICIAN—rubber combs. The Seamless Rubber Co., Inc., New Haven, Conn.

Act of March 19, 1920, Section 1 (b)

162,968 "LEATHERBILT" within an oblong, with circle at back—boots, shoes, and slipper of leather, rubber, and fabric. W. Lewis & Co., Champaign, Ill.

162,996 PEERLESS—rubber heels. Taunton Rubber Co., Taunton, Mass.

163,002 CHELTON-BENKERT—shoes of leather and fabric, leather and rubber. Whitehouse & Hardy, Inc., New York, N. Y.

The United Kingdom

Published November 29, 1922

423,462 JEWEL—rubber and gutta percha goods not included in classes other than Class No. 40. New-York Hamburger Gummi-Waaren Compagnie, 30 Hufnerstrasse, Hamburg, 33, Germany; address in United Kingdom, care of Jensen & Son, 77 Chancery Lane, London, W. C. 2.

428,703 SICORIB between two concentric circles, the inner one inclosing a modified six-pointed star—six-cornered rubber ball. H. Schnezler, 29 Ebnastrasse, Schaffhausen, Switzerland; address in United Kingdom, care of F. Bosshardt, 4 Corporation street, Manchester.

429,275 ZARAMAC—waterproof garments. B. Birnbaum & Son, Limited, 3B, Cannon street, St. Paul's Churchyard, London, E. C. 4

430,355 WESTAMAC—waterproof clothing. George West, Limited, 435-437 Oxford street, London, W. 1.

Published December 6, 1922

426,009 DU-ALL—various cleaning and polishing preparations, including rubber cement for fixing india rubber tires. Du-All Manufacturing Co., 4821 Lexington Avenue, Cleveland, O. For service in the United Kingdom, address care of International Trade Developer, Limited, 25 Victoria Street, London, S. W. 1.

428,450 BONALASTIC—elastic web, cords, thread, etc., Joseph Burgess & Son, Ltd., 12 Brougham St., Leicester.

429,772 PARASKIN, on background representing a skin or fabric stretched between supports simulating tree trunks, an axe and cup at base of each—articles of clothing. The Exxess Rubber Co., Ltd., 26 Finsbury Square, London, E. C. 2.

429,826 VULSOL—india rubber solution. The Elephant Chemical Co., Ltd., 171-173 Neate St., Camberwell, London, S. E. 5.

Published December 13, 1922

427,479 ALPHOMEGA—fountain pens. W. G. Williams & Co., 73 Drury Buildings, 21 Water Street, Liverpool, Lancashire.

429,036 The words TRAVEL OVERGROUND, above a representation of a street showing automobiles, this above the arch of a tunnel opening, with lines representing converging tracks; diverging laterally from the point of convergence the words BELDAM TYRES. At the bottom of the design the words, THE BELDAM TYRE CO., (1920) LIMITED. The whole blocked in heavy black. The Beldam Tyre Co. (1920), Limited, Windmill Road, Brentford, Middlesex.

429,688 Fanciful representation of a fish on triangular background with the letter P in one corner and the letter G in the opposite corner—electric cables. Pirelli General Cable Works, Limited, 144 Queen Victoria Street, London, E. C. 4.

429,701 GABSHEEN—raincoats. Garland & Sons, 13, 15, and 17 London Street, Norwich.

430,559 VULKACIT—chemical substances used in manufactures. Farbenfabriken vorm, Friedr. Bayer & Co., Leverkusen, near Cologne on Rhine, Germany. Address for service in the United Kingdom, care of Carpmaels, Ransford & Newton, 24 Southampton Buildings, Chancery Lane, London, W. C. 2.

Published December 20, 1922

428,790 VICEGRIP—filling agent for leather and rubber goods. George Henry, Northumberland Street Lane, Houtheast, Edinburg, Scotland.

429,285 POLLYANNA—aprons. The Impervious Rubber Co., Limited, 38 Falfield Street, Glasgow, Scotland.

Published December 27, 1922

428,231 PNEULEC—molding machines, core making machines, etc., all being foundry machinery or parts. The Pneulec Machine Co., Ltd., Roebuck Lane, Smethwick, Birmingham.

B428,908 Representation of an express train; to the left the words "EXPRESS YOUR WISHES!" To the right, "WE FULFIL THEM." Clothings for men, boys, and youths, including raincoats and waterproofs. Caslaw, Hayter & Tate, Limited, 162 and 220 High Street, Sunderland.

429,199 GORILLA—india rubber goods. The De Nevers Rubber Tyre Co., Limited, Earlsfield Rubber Mills, 23, 31, 33 and 39 Bendon Valley, Garratt Lane, Wandsworth, London, S. W. 18.

429,656 Fanciful representation of a fish against a triangular background with the letter P in upper left hand corner and G in upper right hand corner—copper wire covered with india rubber or gutta percha. Pirelli General Cable Works, Limited, 144 Queen Victoria Street, London, E. C. 4.

The Dominion of Canada

Registered

32,335 SEA KING—rubber surfaced clothing and footwear. The Miner Rubber Co., Limited, Montreal, Que.

32,378 BULL DOG—automobile tires and tubes. The T. Eaton Co., Limited, Toronto, Ont., and Winnipeg, Man.

32,388 GLIDER—bicycles, vehicles, and pneumatic tires. The T. Eaton Co., Limited, Toronto, Ont., and Winnipeg, Man.

32,434 LIQUID ELASTIGUM—elastic adhesive cement. The Barrett Co., Limited, Montreal, Que.

32,435 PLASTIC ELASTIGUM—elastic adhesive cement. The Barrett Co., Limited, Montreal, Que.

Designs

United States

Issued* November 28, 1922

61,695 Tire Tread. Term 14 years. Robert Iredell, assignor to The General Tire & Rubber Co.—both of Akron, Ohio.

Issued* December 12, 1922

61,715 Tire. Term 14 years. Benjamin H. Pratt, Milwaukee, Wis., assignor to The Badger Rubber Works, Cudahy, Wis.

61,715 61,695 61,716

61,716 Tire. Term 14 years. David H. Roberts, Milwaukee, Wis., assignor by mesne to The Fisk Rubber Co., Chicopee Falls, Mass.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

5,630 Rubber Sole. The Northern Rubber Co., Limited, Guelph, Ont.

Labels

United States

Registered December 19, 1922

25,433 "REPAIRO"—for cans in which rubber repairing outfits are sold. The Repairo Co., Chicago, Ill.

25,438 "'TREO' SPORTELLETTE"—for elastic corsets. Treo Co., Inc., Jamaica, N. Y.

Prints

United States

Registered November 28, 1922

6,442 "KENYON CORD TIRES & TUBES." For advertising rubber tires and tubes. C. Kenyon Co., Inc., Brooklyn, N. Y.

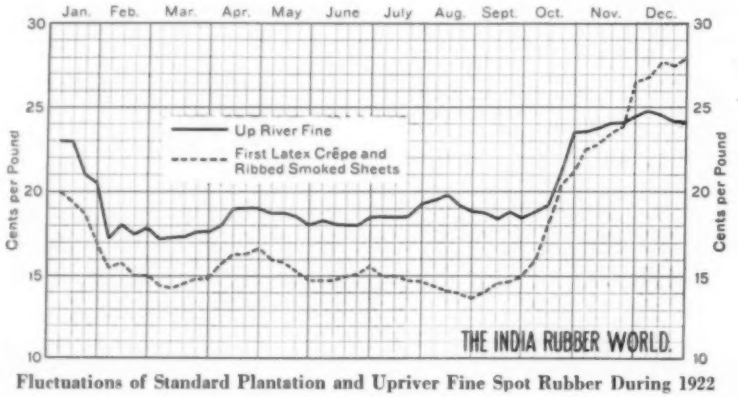
Registered December 19, 1922

6,482 "PILLARS OF STRENGTH." For advertising Tuscan tubes and tires. The Tuscan Tire & Rubber Co., Carrollton, Ohio.

The New York Crude Rubber Market During 1922

FOLLOWING the generally rising market which continued from July to December, 1921, and remained firm throughout December of that year, except for a decline of one cent for upriver fine early in the month, the year 1922 opened with the following spot prices: First latex crêpe and ribbed smoked sheets, 20-21 cents; upriver fine, 23 cents. First latex crêpe and ribbed smoked sheet futures were: January-March, 21-22 cents; April-June, 23 cents; July-December, 24¾ cents.

January trading was dull with fairly steady prices following inventory taking and the holiday season, and was further delayed pending agreement by foreign factors regarding a uniform brokerage rate on sales between dealers, which was finally fixed at $4 per ton, the rate on sales to factories remaining at ¼ cent per pound. In the third week of the month the market turned weak owing to lack of buying interest by large western users, reports of large sales in the London market and the calling of loans by London banks. Spot prices dropped to 16 cents for first latex crêpe and ribbed smoked sheets, with corresponding reductions in futures and Parás. This stimulated factory buying and the last few days of the month were more active than for many weeks. The little interest shown in Parás early in the month soon ceased, as did that in Pontianak and other grades a little later. Balata was dull throughout.



Fluctuations of Standard Plantation and Upriver Fine Spot Rubber During 1922

Weak markets in both New York and London, and active factory buying continued early in February. On firmer London prices dealers turned buyers, with few sellers in the market. An advance of one cent per pound reduced factory purchases, while a rise in exchange the middle of the month further stiffened the market, which continued quiet with scattered and limited factory buying at 15¼ to 15½ cents for plantations. Late in the month ribbed smoked sheets eased off unexpectedly to 14½ cents and became active. Parás, at first dull at 17 cents for upriver fine, became quite active and advanced to 18¼ cents. Balata and guttas were not in demand.

Throughout March dullness continued without reaction, the early London report that a sliding scale export tax would be imposed on all plantation rubber above 150,000 tons stiffening the spot market from 14 to 15-15½ cents for only a few days. Thereafter scattered small buying for factory consumption continued at ¼ cent under the market price of 14½ cents. Parás were quiet at 17½ cents for upriver fine, while balata and guttas were without interest. Plantation futures on March 27 were: May-June, 15-15½ cents; July-September, 16 cents; July-December, 16½ cents.

Buying interest by the large tire companies early in April, together with Singapore advances, stiffened the New York spot market, which rose 2 cents a pound before the middle of the month and assumed a firm tone at 16½ cents for first latex crêpe and ribbed smoked sheets despite small transactions. Stocks were the largest in history, but strongly held in anticipation of early seasonal buying. Sellers were few, buyers would not meet the advances, and consumer interest soon subsided, influenced somewhat by the weakness of the London market. Spot upriver fine was 19 cents on April 26.

Owing to the lack of factory interest and large stocks in both New York and London, plantation spot prices slowly declined during May. On the 24th New York spot sold for factory account in small quantities with fair activity at 14 cents for slightly mouldy and 14½ to 15 cents for prime for July-September. Upriver fine was 18 cents. Brown crêpe was somewhat scarce and in fair demand at 1 to 1½ cents under ribs. Balata remained rather firm with few inquiries.

Continued dullness, lack of factory interest and few bids acceptable to dealers characterized most of the month of June. Conferences between British and Dutch plantation interests regarding output restriction measures restrained dealers from selling. Spot prices for plantations varied not more than ¼ cent above or below 15 cents a pound, the cost of importation at existing exchange rates being 15¼ cents compared with 11¾ cents a year previous. Brown crêpe was steady at about 11 cents. Parás, balata, Pontianak and other grades were in very light demand. Plantation futures on June 26 were: July-September, 15½-15⅝ cents; July-December, 15¾-16 cents; January-June, 16¾-17 cents.

Just before the end of the month spot plantations advanced to 16¼ cents, due to the pooling of 100,000 tons of London stocks under control of the Rubber Growers' Association and the Rubber Associations of London, The Hague and America; also to the report that 80 per cent of the Dutch growers present at a meeting in Amsterdam had voted for crop restriction and to advise with the government.

Following a few days of some activity early in the month the July plantation market steadily declined to the 14½ cent level and closed at 14¾ cents. Demand was small and buyers indifferent. About the 12th a better tone developed in Parás owing to advices from Brazil of shipments to Europe at higher than American prices in competition with plantation. On July 25 upriver fine was quoted at 20 cents.

Trade was at a minimum during the first half of August, mostly odd lots at prices below the market. Buying in the Far East by manufacturers held Singapore prices above those of London and New York, making trading difficult, and the market fell off sharply to 14 cents for ribbed smoked sheets. A dull but steady market continued with minor fluctuations and very little trading either by factories or dealers. London stocks were reported to be over 71,000 tons. Parás and balata were dull throughout the month, Pontianak and other grades dead.

The early weeks of September were very quiet owing to high and firm prices in the Far East markets and strong London cables. Dealers did most of the trading and factories made spot purchases only. An advance of ¼ cent in all positions by the middle of the month soon reacted to the preceding levels. Uncertainty regarding the negotiations on the Stevenson crop restriction plan brought an erratic market late in the month, which was stiffened somewhat by the purchases of English manufac-

turers. American trading was limited by high prices at primary points, dealers being unwilling to meet the high prices paid by manufacturers in the Far East. Parás and other grades were steady and neglected throughout the month. On September 25 spot prices were: first latex crêpe, 14¾ cents; ribbed smoked sheets, 14⅝ cents; upriver fine, 19 cents. First latex crêpe futures were: September-October, 14⅞ cents; October-December, 15 cents; January-March, 15¼ cents; ribbed smoked sheet futures: September-October, 14¾ cents; October-December, 14⅞ cents; January-March, 15⅛ cents.

Acceptance by the British Colonial Office of the Stevenson plan for restriction of plantation rubber production in British-controlled rubber areas of the Far East made higher prices inevitable and the spot market advanced sharply and steadily, while estates sought no forward sales. On October 25 spot first latex crêpe and ribbed smoked sheets were quoted at 22¾ cents and futures had advanced to: November-December, 22¾ cents; January-March, 23½ cents; April-June, 24½ cents. Parás and all other sorts firmed up in sympathy with plantations, and balatas were in short supply. On October 25 upriver fine was 24½ cents.

Following a drop on October 31 from 23 to 22¼ cents, the spot plantation market advanced steadily to 24½-24¾ cents on November 25, due to the cabled information early in the month that the legislatures of Ceylon and the Federated Malay States had adopted the Stevenson rubber control and export taxation plan effective as of November 1, and to the steady reduction of London stocks. New York sales were small, factories purchasing only odd lots, evidently hoping for a decline to materialize. Stocks became more strongly held on both sides of the Atlantic in response to the strongly rising Singapore tendency, and although buyers' and sellers' views drew far apart, consumers began to realize that higher ruling prices had come to stay. On November 25 plantation futures were: December, 24⅝ cents; January-March, 25 cents; January-June, 25¼ cents; April-June, 25½ cents. Parás rose steadily but more slowly in sympathy with plantations. On November 25 upriver fine reached 23¾-24 cents. Pontianak, gutta siak and other sorts advanced moderately. Balatas were firm but neglected although supplies were known to be limited.

During the last week of November ribbed smoked sheets rose sharply to 27 cents and active trading developed with stocks in strong hands and factory buying only for current needs. December brought only a slight reaction, the market remaining steady though quiet, followed by greater activity the second week and an advance to 27½ cents for ribs. As sterling exchange receded, trade became dull and speculative with little change in prices, spot ribs being quoted at 27¼ cents the last week of the year. Neither buyers nor sellers showed any activity. Factories held back for concessions by dealers and dealers hoped for a drop in the eastern markets, although it was believed that further advances will occur after the turn of the year. On December 26 plantation futures were: January, 27⅛ cents; January-March, 27¼ cents; April-June, 28⅛ cents; July-September, 28½ cents. Upriver fine on December 26 was quoted at 24½ cents.

Total rubber imports of all grades for the year 1922 were 290,970 tons, compared with 187,363 tons for 1921, 234,663 tons for 1920 and 231,510 tons for 1919. Of these amounts plantation arrivals were 276,649 tons for 1922, 173,975 tons for 1921, 196,972 tons for 1920, and 192,270 tons for 1919.

Until the sharp advance of plantations in October most of the lower grade rubbers, both plantation and wild, held remarkably steady in price although in small demand owing to the low ruling prices of the better grades. During the last quarter of the year most of these lower grades advanced in sympathy with the plantation market. Africans, Centrals, and East Indians were affected less than South Americans. Guayule washed and dried remained stationary at 26 cents throughout the year. Gutta percha and balata were without interest; fluctuations were relatively small and noticeable advances were held only a short time. Chicle, especially Colombian, dropped greatly in September.

The market at the close of the year was quiet with firm undertone, influenced by the holidays and the belief of holders that higher prices were inevitable early in the new year. On December 28 ribbed smoked sheet was 28 cents for spot, the highest it had been since August, 1920.

Fluctuations in the New York Spot Rubber Market—1913-1922

LOWEST AND HIGHEST NEW YORK SPOT RUBBER PRICES, 1913-1922

Prices in Cents Per Pound

		January	February	March	April	May	June	July	August	September	October	November	December
1913,	First latex crêpe	103 @ 111	96 @ 103	88 @ 96	76 @ 88	78 @ 84	70 @ 77	66 @ 70	66 @ 70	52 @ 64	50 @ 52	52 @ 60	53 @ 55
	Ribbed smoked sheets	109 @ 113	101 @ 110	97 @ 102	80 @ 97	81 @ 83	72 @ 83	70 @ 73	70 @ 72	60 @ 72	59 @ 61	59 @ 60	60 @ 66
	Upriver fine	102 @ 110	96 @ 102	88 @ 96	77 @ 88	82 @ 91	86 @ 89	83 @ 92	83 @ 93	77 @ 88	73 @ 78	73 @ 78	71 @ 74
	Upriver coarse	76 @ 84	72 @ 78	63 @ 72	52 @ 66	55 @ 61	54 @ 62	50 @ 56	50 @ 53	48 @ 52	46 @ 49	44 @ 49	44 @ 47
1914,	First latex crêpe	58 @ 61	58 @ 65	64 @ 72	57 @ 65	54 @ 57	54 @ 57	54 @ 57	60 @ 105	52 @ 56	54 @ 62	58 @ 65	73 @ 87
	Ribbed smoked sheets	62 @ 64	62 @ 65	64 @ 69	57 @ 63	56 @ 63	57 @ 63	56 @ 63	56 @ 80	63 @ 80	63 @ 66	65 @ 84	82 @ 93
	Upriver fine	73 @ 77	73 @ 78	73 @ 74	69 @ 74	68 @ 74	68 @ 69	68 @ 73	75 @ 115	64 @ 78	64 @ 66	63 @ 71	70 @ 76
	Upriver coarse	44 @ 47	44 @ 47	43 @ 46	41 @ 47	41 @ 46	38 @ 42	38 @ 42	43 @ 89	43 @ 55	43 @ 47	46 @ 53	51 @ 60
1915,	First latex crêpe	59 @ 64	57 @ 63	59 @ 60	59 @ 60	59 @ 61	60 @ 63	62 @ 63	59 @ 61	57 @ 58	61 @ 63	63 @ 78	76 @ 99
	Ribbed smoked sheets	65 @ 66	65 @ 66	65 @ 66	59 @ 65	59 @ 61	61 @ 63	62 @ 63	58½ @ 62	58½ @ 59½	59½ @ 62	61½ @ 75	79 @ 79
	Upriver fine	60 @ 75	57 @ 61	58 @ 60	57 @ 60	59 @ 61	61 @ 63	59 @ 63	56 @ 59	55 @ 57	57 @ 62	57 @ 76	68 @ 87
	Upriver coarse	45 @ 58	44 @ 48	45 @ 47	46 @ 48	45 @ 46	45 @ 47	44 @ 47	42 @ 44	41 @ 43	42 @ 47	44 @ 62	57 @ 72
1916,	First latex crêpe	70 @ 103	72 @ 90	83 @ 88	74 @ 82	61 @ 74	56 @ 62	52 @ 57	53 @ 56	54 @ 60	56 @ 60	60 @ 69	68 @ 82
	Ribbed smoked sheets	75 @ 102	75 @ 95	87 @ 93	78 @ 86½	64 @ 77½	58 @ 65	55 @ 63	56 @ 59½	56 @ 62½	62½ @ 74½	69 @ 74½	70½ @ 87
	Upriver fine	73 @ 99	73 @ 80	74 @ 78	72 @ 74	67 @ 72	62 @ 68	65 @ 68	65 @ 68	69 @ 74	71 @ 80	74 @ 83	78 @ 81
	Upriver coarse	60 @ 76	52 @ 60	56 @ 59	55 @ 57	50 @ 54	42 @ 50	41 @ 42	39 @ 42	41 @ 44	42 @ 46	45 @ 47	47 @ 56
1917,	First latex crêpe	75 @ 80	75 @ 85	82 @ 90	81 @ 83	83 @ 83½	65½ @ 88	65½ @ 88	66 @ 67	66½ @ 67½	63½ @ 65½	57 @ 61	54 @ 60
	Ribbed smoked sheets	75 @ 80	75 @ 75½	81 @ 90	81 @ 83	84 @ 84½	65½ @ 80	65½ @ 67	65 @ 67	65½ @ 67	62 @ 64½	56 @ 62	52 @ 61
	Upriver fine	75 @ 79	77 @ 79	76½ @ 80	75 @ 76½	75 @ 76	68½ @ 69	68 @ 69	68 @ 69	68 @ 69	63½ @ 66½	56 @ 62	54 @ 61
	Upriver coarse	53 @ 53	50 @ 53½	52½ @ 54	51 @ 51½	51½ @ 54	49 @ 53	48½ @ 49	48 @ 48½	46 @ 48½	43½ @ 46	36 @ 41½	37 @ 41
1918,	First latex crêpe	53 @ 58	55½ @ 57	55½ @ 60	59½ @ 70	63 @ 68½	60 @ 63	63 @ ...	63 @ ...	60½ @ 63	59 @ 60½	41 @ 63	54 @ 63
	Ribbed smoked sheets	54 @ 57½	53 @ 57	55½ @ 60	59½ @ 70	62 @ 68½	62 @ ...	62 @ ...	62 @ ...	59½ @ 62	58 @ 59½	40 @ 61½	52 @ 61½
	Upriver fine	56 @ 61	56 @ 58	56 @ 60½	60 @ 70	68 @ ...	68 @ ...	68 @ ...	68 @ ...	68 @ ...	63 @ 68	52 @ 68	61 @ 68
	Upriver coarse	37 @ 41	35½ @ 37½	33½ @ 34½	34 @ 38½	38 @ 42	40 @ ...	40 @ ...	40 @ ...	40 @ ...	35 @ 40	31 @ 40	36 @ 40
1919,	First latex crêpe	52 @ 58	56 @ 58	51 @ 56	47 @ 50½	45½ @ 48	40 @ 45	39½ @ 42½	41¾ @ 45½	45½ @ 52½	49½ @ 55	53 @ 54½	51 @ 54¾
	Ribbed smoked sheets	51 @ 56	54 @ 57	50 @ 54½	46½ @ 49½	44½ @ 47	39 @ 44	38½ @ 41½	39¾ @ 44½	44½ @ 51½	48½ @ 54	51 @ 54	51 @ 54½
	Upriver fine	53 @ 57½	58½ @ 61	55½ @ 59½	56 @ ...	55½ @ 56½	55 @ 58½	55 @ 58½	54½ @ 55	54½ @ 56	52 @ 55	49½ @ 52	47 @ 49
	Upriver coarse	34 @ 36	34 @ 35	34 @ 35	34 @ ...	34 @ 34½	32½ @ 34	32 @ 33	31½ @ 32	32 @ 33½	33 @ 35	34½ @ 35	35 @ ...
1920,	First latex crêpe	51 @ 55¼	45¼ @ 51½	46 @ 48¾	42½ @ 46½	38 @ 43¼	37½ @ 39	30 @ 35½	29¾ @ 33½	23½ @ 29	21 @ 26	18½ @ 21	16¾ @ 19½
	Ribbed smoked sheets	51 @ 55	45 @ 56½	46 @ 48	42½ @ 45	38 @ 43	37½ @ 39	29½ @ 33¾	29½ @ 33¾	23½ @ 28¾	20 @ 24	17½ @ 19	16 @ 18½
	Upriver fine	45 @ 50	42½ @ 45	41½ @ 43	40½ @ 42	39 @ 41½	36½ @ 38½	34½ @ 35½	30 @ 35	26 @ 30	23½ @ 26	20½ @ 23	18 @ 20½
	Upriver coarse	34 @ 37	31½ @ 34	31½ @ 31½	30 @ 32	29½ @ 30½	27½ @ 28¼	22 @ 32	20 @ 27	16½ @ 21	15 @ 16½	14½ @ 15½	14 @ 15
1921.	First latex crêpe	19 @ 21¾	19½ @ 20	18 @ 19½	18¼ @ 19½	17½ @ 19½	13½ @ 17½	14 @ 17	14¼ @ 17	14 @ 16	15 @ 17	16 @ 19¾	18 @ 21
	Ribbed smoked sheets	18 @ 20½	17½ @ 19	16½ @ 18	16 @ 17¾	15½ @ 17½	11½ @ 14½	11½ @ 15½	13½ @ 15	13¾ @ 15¾	14¾ @ 17	18½ @ 19¾	21¼ @ 24
	Upriver fine	18 @ 19½	17 @ 17½	16½ @ 18	16½ @ 18	15½ @ 18	11½ @ 17½	11½ @ 17½	13½ @ 19½	17½ @ 21½	21 @ 23	22 @ 24½	22¾ @ 24
	Upriver coarse	13 @ 17	11½ @ 14	11½ @ 12	09 @ 10½	08¾ @ 09½	07 @ 09¼	07½ @ 09	08¾ @ 11½	09½ @ 11½	11¾ @ 12	12 @ 15	14 @ 15½
1922,	First latex crêpe	15¼ @ 21	14 @ 16½	13¾ @ 15	14¾ @ 16¾	14¾ @ 16¼	14¾ @ 16	14½ @ 15¾	13¾ @ 14¾	13¾ @ 15¼	15¾ @ 22¾	22½ @ 26	26¾ @ 28¾
	Ribbed smoked sheets	15½ @ 21¾	14¼ @ 16¾	13 @ 15½	14¾ @ 16¾	14¾ @ 16	14¾ @ 16	14½ @ 15¾	13¾ @ 14½	13¾ @ 15¾	15¾ @ 22¾	22½ @ 26	26¾ @ 28¾
	Upriver fine	17½ @ 23	16¾ @ 18½	17 @ 17¾	17¼ @ 19¼	18 @ 18½	18 @ 18½	18 @ 19½	18¼ @ 19	18½ @ 24	22½ @ 24	23½ @ 25	23½ @ 25½
	Upriver coarse	12½ @ 18	12 @ 13½	12 @ 13	12 @ 14	12½ @ 13¾	12¼ @ 13	12½ @ 14	13 @ 14	13½ @ 19	18½ @ 19	17 @ 20	17 @ 18½

Reclaimed Rubber in 1922

For months previous to January, 1922, the abnormally low pri for crude rubber had induced users of reclaimed rubber to d place the latter with crude because of its better compounds quality and competitive price.

The year opened with this handicap on the reclaimed rubb industry, which was operating at 30 to 40 per cent of capaci In February, demand for reclaim showed further falling o and by March this industry was operating on 25 per cent, at wh rate it grubbed along hoping for a turn for the better.

The steadily improving condition of the rubber manufacturi industry, together with the forecasted British plan for restri ing the output of plantation rubber, had by September develop a routine demand for reclaims and brought the rate of produ tion to nearly half of capacity. The last quarter of the year t reclaiming industry had quickened into its normal activity.

This position reflects the general rubber industrial conditio as well as the crude rubber price factor soaring under the stim lation of the Stevenson plan.

The year's prices for standard grades of reclaim were nomin and virtually unchanged until December, when quotations were a vanced one cent uniformly on all the basic grades.

Amsterdam Rubber Market

JOOSTEN & JANSSEN, Amsterdam, report, under date of January 1922:

The year opened with a further progress of the firm tendency and pric advanced further to 4 cents above the closing quotations of our last repor viz., to 80 cents for spot, and a fair business passed.

Subsequently the market went dull and uncertain and prices gave way little, but without pressing sellers coming out.

The close is again rather better but quiet at the following prices:

Hevea crêpe, Fl. 80	Sheets, Fl. 80 spot.
Hevea crêpe, Fl. 81½	Sheets, Fl. 81½ January to March.
Hevea crêpe, Fl. 84	Sheets, Fl. 84 April to June.
Hevea crêpe, Fl. 86	Sheets, Fl. 86 July to September.

Singapore Rubber Market

GUTHRIE & CO., Limited, Singapore, reports under date of December 1922:

During the past week the market has been active and advancing, but co siderable profit-taking accompanied the rise, and values after touching 50 cents spot were sold down to 48¾ cents. Forward positions have been ve erratic, due to sporadic incursions of the speculative element.

The auctions opened to a fair demand, but sellers, while meeting the easi market to some extent, were not offering freely.

No sales of standard sheet and crêpe were effected. Good F. A. Q. shee sold up to 48¾ cents, an advance of 2 cents on the week.

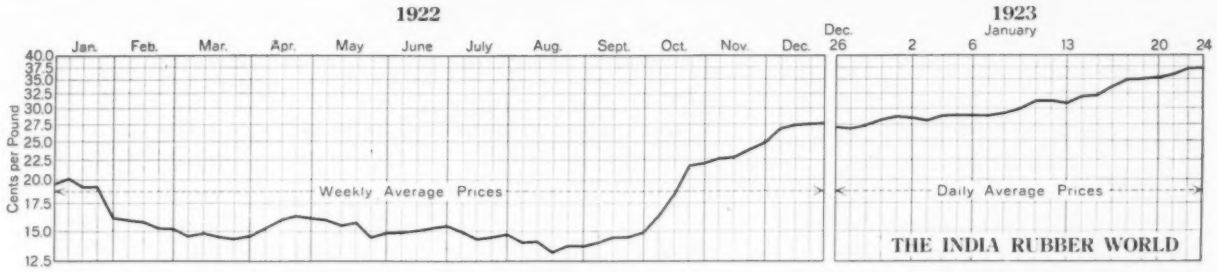
Crêpes were poorly supported, good quality lots fetching 47¾ to 48 cents. Brown and dark crêpes were steady. Dark scrap advanced 2½ cent Of 718 tons catalogd, 303 tons were sold.

The following is the course of values:

	In Singapore per pound	Sterling Equivale per Pound in London
Sheet, fine ribbed smoked	No sales	No sales
Sheet, good F. A. Q.	48 @ 48¾	1/ 2½ @ 1/ 2
Sheet, off quality	44½ @ 47¾	1/ 1½ @ 1/ 2
Crêpe, fine pale	No sales	No sales
Crêpe, good pale	47¼ @ 48¼	1/ 2¾ @ 1/ 3
Crêpe, off quality	44½ @ 47½	1/ 2 @ 1/ 2
Crêpe, fine brown	44 @ 45	1/ 1⅞ @ 1/ 2
Crêpe, good brown	38½ @ 44¼	1/ 0¼ @ 1/ 1
Crêpe, dark	41 @ 42½	1/ 1 @ 1/ 1
Crêpe, bark	38¼ @ 41½	1/ 0⅜ @ 1/ 1

THE RUBBER EXPORTING BUSINESS OF BOLIVIA IS PRACTICALL ruined, and some of the leading rubber exporters are apparently going out of the rubber business. There are stocks on hand i Southern Bolivia and Eastern Bolivia which have no market. Th rubber growing section is a long way from ocean or railroad trans portation, says Consul D. C. McDonough, La Paz, in a report t the Department of Commerce.

THE DUNLOP RUBBER CO. HAS ANNOUNCED A 15 PER CENT reduction on the retail price of solid tires in Spain, effective Janu ary 1, 1923. No price increases by Dunlop or Michelin on casings or inner tubes have been announced. Increases are unlikely be cause of the present large stock of tires on hand.


1922
1923
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
Dec. 26
January 2 6 13 20 24
Cents per Pound
40.0 37.5 35.0 32.5 30.0 27.5 25.0 22.5 20.0 17.5 15.0 12.5
Weekly Average Prices
Daily Average Prices
THE INDIA RUBBER WORLD

Ratio Graph of New York Market Fluctuations—Average Prices of Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

NEW YORK spot price on ribbed smoked sheets a month ago was 27½ cents a pound. The market opened at the turn of the year at 28½ cents, advancing steadily on higher cables from London. The advance progressed uninterruptedly, reaching 29 cents January 6, 31½ cents January 13, 35 cents January 20, and 37 cents January 24. The latter is the highest price in the New York market since June, 1920, when that level was reached in the downward plunge of prices that year from 53 cents in January to 17½ cents in December.

Holiday week the market was quiet around 27½ cents, with very little buying interest on the part of dealers or consumers. The opening week of the year factory buyers became convinced that higher prices were in order and began buying. The second week the market was very firm and active in every position and grade. There was active trading among dealers, and consumers were seeking all grades and positions. On January 11 the high level of 32 cents was reached for February delivery. The balance of the week the market was mixed and dealers held back.

During the third week rubber of all grades and all positions advanced about 3 cents a pound. Trading and buying were active, due to general realization on the part of consumers of the prospective tonnage required this year, and the strong upward price movement that continues, without indication of early abatement.

Parás have responded to the higher figures for plantations, making successive weekly advances during the month to 26, 30, and 35 cents, reaching the latter figure January 20. Balata is in short supply and higher, with no stocks available. Pontianak and other grades are steady, firm, and have advanced in price.

Imports of all grades during December were 38,112 tons, compared with 24,690 tons one year ago. Plantation arrivals for December were 35,550 tons, compared with 23,596 tons for December one year ago. Total imports of all grades for the twelve months ended December 31, 1922, were 290,970 tons, compared with 187,363 tons for the corresponding period the year previous. Total imports of plantations for the twelve months ended December 31, 1922, were 276,694 tons, compared with 173,975 tons for 1921.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATIONS. January 2. Spot first latex crêpe, 28½ cents; Feb., 28¾ cents; Feb.-Mar., 29 cents; Apr.-June, 30 cents; July-Sept., 30¾ cents. JANUARY 26. Spot first latex crêpe, 35¼ cents; Feb. 35⅜ cents; Feb.-Mar., 35½ cents; Apr.-June, 35¾ cents; July-Sept., 36½-37 cents.

JANUARY 2. Spot ribbed smoked sheets, 28½ cents; Feb., 28¾ cents; Feb.-Mar., 29 cents; Apr.-June, 30 cents; July-Sept., 30¾ cents. JANUARY 26. Spot ribbed smoked sheets, 35¼ cents; Feb., 35⅜ cents; Feb.-Mar., 35½ cents; Apr.-June, 35¾ cents; July-Sept., 36½-37 cents.

JANUARY 2. Spot, No. 1 amber crêpe, 28½ cents.; Feb., 28⅝ cents; Feb.-Mar., 28¾ cents; Apr.-June, 29¼ cents. JANUARY 26. Spot No. 1 amber crêpe, 35 cents; Feb., 35¼ cents; Feb.-Mar., 35½ cents.

JANUARY 2. Spot No. 1 rolled brown crêpe, 27⅛ cents; Feb., 27¼ cents; Feb.-Mar., 27½ cents; Apr.-June, 28 cents. JANUARY 26. Spot No. 1 rolled brown crêpe, 32 cents; Feb., 32¼ cents; Feb.-Mar., 32½ cents.

SOUTH AMERICAN PARÁS AND CAUCHO. JANUARY 2. Spot, upriver fine, 24¾ cents; islands fine, 22 cents; upriver coarse, 18¾ cents; islands coarse, 14½ cents; Cametá, 14¼ cents; caucho ball, 21 cents. JANUARY 26. Spot, upriver fine, 35 cents; islands fine, 30 cents; upriver coarse, 29 cents; islands coarse, 19 cents; Cametá, 20 cents; caucho ball, 30-32 cents.

London

During the holiday week the London market was firm at 14 pence, closing at 14⅛ pence. The first week in January opened active and strong at 14¾, advancing to 15 pence at the week end, closing optimistic and firm. The second week opened at 15 pence and closed at 15⅞. The advance, based on Singapore prices, was steady except for a single decline to 14⅞ pence. The third week opened at 15⅞ pence, and advances were made in all positions, the market for the week closing at 17⅛. Sellers were not inclined to sell, and interest centered in the New York market and reported decision of the Malay government not to release an increase of production for the next quarter under the Stevenson plan of control. The last week of the month showed fairly active trading and prices advanced to 18¼ pence on the 24th.

New York Quotations

Following are the New York spot quotations per pound, for one year, one month ago, and January 26, the current date:

Plantation Hevea

	January 1, 1922	January 1, 1923	January 26, 1923
CREPE			
First latex	$0.20½@	$0.27¼@	$0.35¼@
Off latex	.20 @	.26½@	.34¾@
Amber No. 1	.19½@	.26½@	.35 @
Amber No. 2	.19 @	.26 @	.34½@
Amber No. 3	.18½@	.25½@	.34 @
Brown, thick, thin, clean	.18 ½@	.26½@	.34 @
Brown, specky	.18 @	.25½@	.33¼@
Brown rolled	.18 @	.25¼@	.32 @
SHEET			
Smoked, ribbed	.20½@	.27¼@	.35¼@
Smoked, plain	.19½@	.25 @	.34 @
Unsmoked	.19 @	.24½@	.33 @

CRUDE RUBBER MARKET—*Continued*

LIQUID LATEX	January 1, 1922	January 1, 1923	January 26, 1923
Liquid latex	@	*per gal.* 1.25	*per gal.* 1.25
SCRAP			
Colombo scrap No. 1	.16¾@	.22 @	.29 @
Colombo scrap No. 2	.15½@	.20 @.21	.28 @
East Indian			
PONTIANAK			
Banjermassin	.08¼@	.08½@	.08¼@
Pressed block	.13 @	.13 @.15	.07¾@
Sarawak	.07 @	.07¾@	.07½@
South American			
PARAS			
Upriver fine	.22½@.23	.24½@	.35 @
Upriver fine*	@	*.33 @	*.46¾@
Upriver medium	.20 @.21	.22½@	.30½@
Upriver coarse	.15 @	.18½@	.29 @
Upriver, weak, fine	.21 @	@	.30 @
Islands fine	.21 @	.21½@	.30 @
Islands fine*	@	*.31 @	*.45 @
Islands medium	.20 @	.19¾@	.25½@
Islands coarse	.11 @	.14½@	.19
Cametá	.11 @	.14¼@	.20
Cametá*	*.21½@	*.27½@	*.40 @
Acre Bolivian fine	.23 @	.25 @.25½	.35 @
Acre Bolivian fine*	*.33½@	*.33 @	*.46¾@
Beni Bolivian	@	.25¼@	.35¼@
Madeira fine	.23½@		.34 @
Peruvian fine	.21 @	.24 @	.32 @
Tapajos fine	.21 @	.22½@.23	.33 @
CAUCHO			
Upper caucho ball	.14 @	.21½@	.32 @
Upper caucho ball*	@	*.27 @	*.42 @
Lower caucho ball	.11½@.12¼	.20 @	.30 @
Manicobas			
Ceará negro heads	.12 @	†.20 @	†.27 @
Ceará scrap	.08 @	†.18 @	†.25 @
Manicoba 30%, guaranty	.09 @	†.15 @	†.20 @
Mangabeira, thin sheet	.15 @	†.20 @	†.27 @
Centrals			
Central scrap	.14 @.15	.16 @	.27 @.28
Central scrap and strip	.13½@.14½	.17½@	.26 @.27
Central wet sheet	.05½@.06½	.11 @.12	.20 @.24
Corinto scrap	.14 @.15	.18½@	.27 @.28
Esmeralda sausage	.14½@.15½	.18 @	@
Guayule washed and dried	.26 @	.27 @	.29 @
Africans			
Benguela, No. 1, 28½%	.08 @.10	.11 @.12	.23 @
Benguela, No. 2, 32½%	.08 @.10	.10 @.11	.20 @
Congo prime, black upper	@	.14 @	.30 @
Congo, prime, red upper	@	.16 @	.27 @
Kassai, black	.16 @	.13 @	.28 @
red	.12 @.13	.15 @	.26 @
Gutta Percha			
Gutta Siak	.18½@	.21 @.22	.21 @
Red Macassar	2.85 @	3.00 @	3.00 @
Balata			
Block, Ciudad Bolivar	.56 @	.70 @.73	.74 @
Colombia	.43 @	.58 @.60	.62 @
Panama	.40 @.43	.50 @.52	.62 @
Surinam, sheet	.69 @	.77 @.80	.86 @
amber	.71 @	.80 @.83	.89 @
Chicle			
Colombia	@	.25 @.30	.25 @.30
Honduras	@	.62 @	.62 @
Venezuela	@	.63 @	.63 @
Yucatan fine	@	.65 @	.65 @

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.

Comparative Low and High New York Spot Rubber Prices

	January 1923*		January 1922		January 1921	
PLANTATIONS						
First latex crêpe	$0.27	@$0.37¼	$0.17	@$0.21	$0.19	@$0.21¾
Smoked sheet, ribbed	.28⅝@	.37¼	.17	@ .21¼	.18	@ .20½
PARAS						
Upriver, fine	.24½@	.36	.20¼@	.23	.18 @	.19½
Upriver, coarse	.18½@	.28¾	.13 @	.15	.13 @	.17
Islands, fine	.22 @	.33½	.18½@	.21	.17 @	.18
Islands, coarse	.13½@	.25	.09 @	.11	.11¼@	.14
Cametá	.13½@	.20	.08 @	.11½	.10½@	.12

*Figured to January 26, 1923.

Reclaimed Rubber

Practically all grades of reclaimed rubber have advanced in price during the past month. Consumers' requirements virtually demand full time operation of the reclaiming plants to supply them. Further increases in reclaimed rubber prices are expected in view of the increasing needs of the rubber industry and the stimulus afforded by the current rise in the crude rubber market. Revised quotations are as follows:

New York Quotations

January 25, 1923
Prices subject to change without notice

STANDARD RECLAIMS		
Floating	$0.16	@$0.17
Friction	.20	@ .21
Mechanical	.09	@ .12
Shoe, unwashed	.10	@ .12
Tires, auto	.09	@ .11
truck	.09	@ .10
White	.14	@ .18

New York Crude Rubber Arrivals

Parás and Caucho

	Fine Pará	Medium Manáos	Coarse	Caucho	Totals Pounds
DECEMBER 22. By "Aidan,"					
H. A. Astlett & Co.	67,320	.....	.....	.....	67,320
Paul Bertuch	117,046	7,286	4,473	198 ‖	131,278
Poel & Kelly, Inc.	246,354	22,225	52,568	44,483	365,630
General Rubber Co.	105,280	.....	2,240	..... ¶	145,600
Ultramares Corporation	24,000	.....	.....	.....	24,000
DECEMBER 26. By "Parnhyba," Pará.					
H. A. Astlett & Co.	32,740	8,670	51,620	14,440 §	132,880
Paul Bertuch	103,040	6,720	.....	13,440	123,200
General Rubber Co.	.....	.....	.....	8,960	8,960
JANUARY 2. By "Cuthbert," Manáos, Brazil and Pará.					
General Rubber Co.	15,680	.....	.....	.....	15,680
L. Littlejohn & Co., Inc.	67,200	.....	.....	.....	67,200
Poel & Kelly, Inc.	161,579	10,877	54,841	26,532	253,829
Ultramares Corporation	8,000	.....	1,200	7,800	17,000
H. A. Astlett & Co.	51,060	19,820	32,420	2,630	105,930
Paul Bertuch	60,687	5,844	6,179	.....	72,710
H. A. Astlett & Co.	††11,000	.....	††22,170	.....	††33,170
JANUARY 7. By "Bonheur," Manáos, Pará and Brazil.					
L. Littlejohn & Co., Inc.	40,320	.....	.....	.....	40,320
Meyer & Brown, Inc.	‖62,720	.....	.....	.....	62,720
Poel & Kelly, Inc.	27,000	.....	4,700	12,800	44,500
Ultramares Corporation	9,400	.....	.....	.....	9,400
H. A. Astlett & Co.	72,730	3,360	6,520	15,550 ¶¶	122,120
JANUARY 8. By "Lapland," Antwerp.					
Poel & Kelly, Inc.	.....	.....	.....	67,200	67,200
JANUARY 9. By "Ponceno," Pará.					
H. A. Astlett & Co.	70,690	.....	11,350	.....	82,040
Paul Bertuch	8,000	3,300	.....	.....	11,300
General Rubber Co.	.....	.....	.....	.....	**28,000
Poel & Kelly, Inc.	112,000	.....	3,360	.....	115,360

¶Includes 38,080 lbs. of Cametá. ‖Fine and medium. **Cametá. §Includes 25,410 lbs. of Cametá. ††Washed and dried in Pará. ¶¶Includes 23,960 lbs. of Cametá. ‖‖Includes 2,275 lbs. of Madeira Knapsack. ‡‡Includes 10,617 lbs. of Madeira Knapsack.

New York Average Spot Rubber Prices

PRICES IN CENTS PER POUND

	December, 1922						January, 1923													
PLANTATIONS	25*	26	27	28	29	30	1*	2	3	4	5	6	8	9	10	11	12	13	15	16	17	18	19	20
Sheet																								
Ribbed smoked	....	27⅜	27¼	27⅝	28½	29	....	28⅞	28½	29⅛	29¼	29⅛	29¼	29½	30⅛	31½	31½	31⅜	32⅛	32¼	33¾	35	35⅛	35¼
Crêpe																								
First latex	....	27⅜	27¼	27⅝	28⅛	29	....	28⅞	28½	29	29¼	29⅛	29¼	29½	30⅛	31½	31½	31⅜	32⅛	32¼	33¾	35	35⅛	35¼
Off latex	....	27	26⅞	27⅛	28⅛	28½	....	28⅛	28⅛	28½	28⅝	28⅞	29	29½	30⅞	31	30⅞	31⅛	31¾	33⅛	34¾	34½	34½	34⅝
No. 1 blanket	....	26⅞	26¾	27⅛	28⅛	28½	....	28½	28¼	28½	28⅞	28¾	29¼	29¼	29⅞	31	31	31	31⅛	31⅞	33½	34½	34½	34⅞
No. 2 blanket	....	26½	26½	27	28⅛	28⅛	....	28¼	27¾	28¼	28½	28⅞	29	29	29⅜	30⅝	30¾	30¾	31⅜	31½	33	34	34⅛	34⅜
No. 3 blanket	....	26¼	26¼	26¾	28	27⅞	....	27⅞	27½	28	28⅛	28⅜	28⅜	29⅛	30¼	30½	30¼	30¼	.11⅛	31	32⅝	33⅛	33⅝	34
Thin, clean, brown	....	26⅛	26⅛	26½	27¼	27⅜	....	27¾	27⅜	27¼	28	28	28	28⅛	29	30	30⅛	30¼	31	31¼	32¼	33⅞	34⅛	34
Specky brown	....	25⅜	25½	26	26⅝	27	....	27¼	26¾	27⅜	27¼	27¼	27⅜	28½	29¼	29⅝	29¾	30½	30⅝	31⅜	33	33¼	33⅜	
Rolled brown	....	25	25	25½	26⅛	26½	....	26⅞	26⅞	27	27⅛	27⅛	27⅛	27¼	27¼	28⅛	28⅛	28	28⅞	28⅞	31	31⅛	31⅞	32⅛	

*Holiday

Crude Rubber Arrivals at New York as Stated by Ships' Manifests—*Continued*

Plantations

(*Figured at 180 lbs. to the bale or case.*)

	Pounds	Totals
DECEMBER 17. By "Mississippi," London.		
H. A. Astlett & Co.	11,200	
Various	23,180	34,380
DECEMBER 17. By "Barbodian," London.		
Various	173,700	173,700
DECEMBER 18. By "Antonia," London.		
Various	52,200	52,200
DECEMBER 18. By "Elkridge," Far East.		
Charles T. Wilson Co., Inc..	*141,120	
Baird Rubber & Trading Co..	*22,400	163,520
DECEMBER 21. By "President Garfield," London.		
Various	18,360	18,360
DECEMBER 22. By "Langus," Lisbon.		
Various	32,220	32,220
DECEMBER 22. By "Vardulia," Far East.		
Poel & Kelly, Inc.	33,500	
Various	89,400	122,940
DECEMBER 25. By "Havre Maru," Far East.		
Baird Rubber & Trading Co., Inc.	224,000	
L. Littlejohn & Co., Inc....	828,800	
Poel & Kelly, Inc.	1,007,299	
Various	102,421	2,162,520
DECEMBER 25. By "Slavic Prince," Far East.		
H. A. Astlett & Co.	190,400	
Fisk Rubber Co.	67,200	
Baird Rubber & Trading Co., Inc.	56,000	
F. R. Henderson & Co., Inc..	156,800	
L. Littlejohn & Co., Inc....	1,247,680	
L. Littlejohn & Co., Inc....	†89,600	
Meyer & Brown, Inc.	22,400	
Poel & Kelly, Inc.	168,220	
Fred Stern & Co., Inc.	44,800	
William H. Stiles & Co.	67,200	
Charles T. Wilson Co., Inc..	492,800	
Various	†96,520	2,699,620
DECEMBER 26. By "Menominee," London.		
Meyer & Brown, Inc.	11,200	
Various	91,040	102,240
DECEMBER 28. By "Hakodate Maru," Far East.		
Fisk Rubber Co.	134,400	
General Rubber Co.	89,600	
F. R. Henderson & Co., Inc.	81,700	
L. Littlejohn & Co., Inc....	224,000	429,700
DECEMBER 29. By "Manchuria," Hamburg.		
Various	105,600	105,600
DECEMBER 29. By "President Monroe," London.		
Various	54,000	54,000
DECEMBER 29. By "Bilderdyk," Far East.		
L. Littlejohn & Co., Inc....	358,400	
Various	6,640	365,040
DECEMBER 31. By "Buckleigh," Far East.		
L. Littlejohn & Co., Inc....	82,000	82,000
DECEMBER 31. By "Kambangan," Far East		
H. A. Astlett & Co.	22,400	
Fisk Rubber Co.	22,400	
General Rubber Co.	476,000	
F. R. Henderson & Co., Inc.	138,200	
L. Littlejohn & Co., Inc....	607,040	
Meyer & Brown, Inc.	112,000	
Peel & Kelly, Inc.	745,259	
Fred Stern & Co., Inc....	55,302	
Various	967,619	3,146,220
DECEMBER 31. By "City of Melbourne," Far East.		
H. A. Astlett & Co.	295,750	
Fisk Rubber Co.	56,000	
Baird Rubber & Trading Co., Inc.	481,600	
General Rubber Co.	221,760	
F. R. Henderson & Co., Inc.	156,800	
Hood Rubber Co.	†190,400	
L. Littlejohn & Co., Inc....	1,536,640	
L. Littlejohn & Co., Inc....	†100,800	
Meyer & Brown, Inc.	134,400	
Poel & Kelly, Inc.	351,817	
Poel & Kelly, Inc.	†24,640	
Fred Stern & Co., Inc....	69,400	
William H. Stiles & Co....	167,200	
Charles T. Wilson Co., Inc..	359,520	
Charles T. Wilson Co., Inc..	†78,400	
Various	3,893,273	8,118,400
DECEMBER 31. By "Pakling," Far East		
H. A. Astlett & Co.	14,000	
L. Littlejohn & Co., Inc....	618,500	
Poel & Kelly, Inc.	31,673	
Charles T. Wilson Co., Inc..	67,200	
Various	306,087	1,097,460
DECEMBER 31. By "Mesaba," London.		
Various	28,800	28,800
DECEMBER 31. By "Riol," London.		
L. Littlejohn Co., Inc....	112,000	112,000
JANUARY 1. By "Lucerie," Far East.		
L. Littlejohn & Co., Inc....	505,400	
Fred Stern & Co., Inc....	2,240	
Hood Rubber Co.	†63,180	
Various	†1,260	
Various	103,400	675,480
JANUARY 2. By "West Prospect," Singapore.		
Baird Rubber & Trading Co., Inc.	*33,600	33,600
JANUARY 2. By "Ncordam," Rotterdam.		
L. Littlejohn & Co., Inc....	89,600	
Fred Stern & Co., Inc....	55,138	
Various	10,782	155,520
JANUARY 3. By "Rochambeau," Havre.		
Various	39,380	39,380
JANUARY 3. By "President Adams," London.		
Various	3,960	3,960
JANUARY 3. By "President Adams," London.		
Various	3,960	3,960
JANUARY 6. By "Fairfield City," Far East.		
H. A. Astlett & Co.	89,600	
Baird Rubber & Trading Co., Inc.	56,000	
General Rubber Co.	56,000	
F. R. Henderson & Co., Inc.	1,420,000	
L. Littlejohn & Co., Inc....	1,008,000	
Meyer & Brown, Inc.	56,000	
Poel & Kelly, Inc.	482,358	
Fred Stern & Co., Inc....	50,400	
William H. Stiles & Co....	44,800	
Charles T. Wilson Co., Inc..	†33,600	
Charles T. Wilson Co., Inc..	235,200	
Various	542,822	4,074,780
JANUARY 6. By "Bellerophon," Far East.		
H. A. Astlett & Co.	296,800	
Fisk Rubber Co.	224,000	
Baird Rubber & Trading Co., Inc.	380,800	
General Rubber Co.	724,040	
F. R. Henderson & Co., Inc.	268,800	
Hood Rubber Co.	†167,858	
L. Littlejohn & Co., Inc....	4,294,800	
Meyer & Brown, Inc.	526,400	
Poel & Kelly, Inc.	842,043	
Fred Stern & Co., Inc....	231,448	
William H. Stiles & Co....	89,600	
Charles T. Wilson Co., Inc.	338,240	
Various	2,119,629	10,504,458
JANUARY 6. By "West Mahomet," Far East.		
Baird Rubber & Trading Co., Inc.	44,800	
General Rubber Co.	556,080	
Hood Rubber Co.	†112,020	
L. Littlejohn & Co., Inc....	1,254,400	
Meyer & Brown, Inc.	22,400	
Poel & Kelly, Inc.	697,573	
Fred Stern & Co., Inc....	190,432	
William H. Stiles & Co....	201,600	
Charles T. Wilson Co., Inc.	123,200	
Various	‡47,160	
Various	1,667,095	4,916,740
JANUARY 7. By "Valacia," London.		
Various	131,760	131,760
JANUARY 8. By "Finland," Antwerp.		
Various	35,640	35,640
JANUARY 13. By "City of Harvard." Far East.		
L. Littlejohn & Co., Inc....	790,700	
Poel & Kelly, Inc.	59,222	
Fred Stern & Co., Inc....	4,500	
Charles T. Wilson Co., Inc..	32,480	886,902
JANUARY 15. By "Kentucky." Far East.		
H. A. Astlett & Co.	375,200	
Baird Rubber & Trading Co., Inc.	380,800	
General Rubber Co.	235,200	
F. R. Henderson & Co., Inc.	205,600	
L. Littlejohn & Co., Inc....	1,388,800	
Meyer & Brown, Inc.	459,200	
Poel & Kelly, Inc.	752,576	
Fred Stern & Co., Inc....	142,682	
William H. Stiles & Co....	22,400	
Charles T. Wilson Co., Inc....	333,760	4,296,218
JANUARY 16. By "Tenyo Maru." Far East.		
Charles T. Wilson Co., Inc..	*44,800	44,800

*Arrived at San Francisco.
†Arrived at Boston.
‡Arrived at Baltimore.

Rubber Latex

DECEMBER 31. By "Kambangan," Far East		
Various	17,000 gal.	
DECEMBER 31. By "City of Melbourne," Singapore.		
Various	4 cases	
JANUARY 6. By "West Mahomet," Far East.		
Various	30,000 gal.	

Centrals

	Pounds	Totals
DECEMBER 24. By "Gen. O. H. Ernst." Cristobal.		
Ultramares Corporation	11,600	
Various	77,060	88,660
DECEMBER 31. By "Alvarado," Guayaquil.		
Various	4,320	4,320
DECEMBER 31. By "Mineola," Esmeraldas.		
Ultramares Corporation	1,200	1,200
JANUARY 12. By "Santa Tecla," Bahia de Caraquez.		
Ultramares Corporation	12,900	12,900

Africans

DECEMBER 18. By "Baltic," Liverpool.		
Fred Stern & Co., Inc.	22,600	22,600
DECEMBER 18. By "Michigan," Antwerp.		
General Rubber Co.	190,200	190,200
DECEMBER 20. By "Sonora." Bordeaux.		
Baird Rubber & Trading Co., Inc.	44,500	44,500
DECEMBER 24. By "Missouri," Antwerp.		
Various	145,420	145,420
DECEMBER 27. By "Caronia," Liverpool.		
Poel & Kelly, Inc.	78,000	78,000
JANUARY 2. By "Pakling," Padang.		
Poel & Kelly, Inc.	22,400	22,400
JANUARY 8. By "Megantic," Liverpool.		
Fred Stern & Co., Inc.	16,970	16,970
JANUARY 11. By "Port Nicholson," Liverpool.		
Poel & Kelly, Inc.	167,666	167,666
JANUARY 17. By "Eastern Dawn," Antwerp.		
Fred Stern & Co., Inc.	44,746	44,746

Pontianak

DECEMBER 25. By "Slavic Prince," Singapore.		
L. Littlejohn & Co., Inc....	148,000	
Various	65,000	213,000
DECEMBER 31. By "City of Melbourne," Singapore.		
Various	125,400	125,400
DECEMBER 31. By "Kambangan," Far East.		
L. Littlejohn & Co., Inc....	120,000	120,000
JANUARY 6. By "Fairfield City," Singapore.		
Various	121,500	121,500
JANUARY 6. By "Bellerophon," Singapore.		
Various	68,100	68,100
JANUARY 14. By "Kentucky," Brazil.		
L. Littlejohn & Co., Inc....	50,000	50,000

Gutta Siak

DECEMBER 31. By "City of Melbourne," Singapore.		
L. Littlejohn & Co., Inc....	56,000	56,000

Gutta Percha

DECEMBER 19. By "Tauro City," Liverpool.		
Various	61,800	61,800
DECEMBER 31. By "City of Melbourne," Singapore.		
Various	24,000	24,000
JANUARY 1. By "Pakling," Far East.		
L. Littlejohn & Co., Inc....	56,000	56,000

Maniçobas

DECEMBER 29. By "Mineola," Bahia.		
Pablo Calvet & Co.	7,200	
Importers & Dealers, Inc....	1,260	
Ultramares Corporation	1,800	
Various	7,740	18,000

Balata

DECEMBER 17. By "Barbodian," London.		
Various	12,960	12,960
DECEMBER 17. By "Mississippi," London.		
Various	15,450	15,450
DECEMBER 20. By "Maraval," Trinidad.		
Middleton & Co., Ltd.	7,000	
Various	12,050	19,050
DECEMBER 22. By "Aiden," Pará.		
L. Littlejohn & Co., Inc.	22,000	22,000
DECEMBER 25. By "Bogota," Cartagena.		
Various	1,500	1,500
DECEMBER 26. By "Prins der Nederlanden," Paramaribo.		
Various	150	150
DECEMBER 28. By "Metapan," Puerto Colombia.		
Various	45,450	45,450
JANUARY 3. By "Cuthbert," Pará.		
Ultramares Corporation	16,500	16,500
JANUARY 15. By "Paria," Cayenne.		
Middleton & Co., Ltd.	16,720	16,720
JANUARY 21. By "Dunstan," Brazil.		
L. Littlejohn & Co., Inc.	22,000	22,000

Exports of India Rubber Manufactures from the

EXPORTED TO—	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed and Auto Cloth and Auto Topping Value
EUROPE													
Austria	.....	.....	.....	.....	.....	.....	33	$32	.....	.....	.....	.....	.....
Azores & Madeira Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgium	$636	$1,878	$1,485	$1,496	.....	.....	984	570	.....	.....	$11	$2,403	$1,504
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	500	330	1,187	.....	2,480	$4,334	4,625	6,858	1,320	$1,378	18	1,365	521
Esthonia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Finland	3,052	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	458	.....
France	3,214	571	200	29,909	.....	.....	950	411	.....	.....	.....	19,430	1,140
Germany	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greece	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland and Faroe Islands	.....	.....	.....	.....	1,509	4,906	1,544	3,392	.....	.....	.....	.....	.....
Italy	.....	.....	.....	.....	.....	.....	.....	.....	137	216	.....	5,292	12,104
Malta, Gozo, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	.....	200	.....	.....	.....	.....	528	456	1,519	1,216	568	439	510
Norway	3,029	1,449	.....	.....	654	1,861	38,922	27,869	406	958	549	8,359	163
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	258	.....	.....	.....	.....	.....	.....	504	408	.....	.....	.....
Rumania	.....	.....	.....	.....	.....	.....	4,760	6,060	.....	.....	.....	.....	.....
Russia in Europe	.....	706	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	966	.....	.....	.....	264	741	5,903	4,538	.....	.....	301	2,743	35
Sweden	3,365	1,195	.....	.....	352	906	274	592	.....	.....	327	1,086	300
Switzerland	.....	.....	.....	2,110	.....	.....	6,302	4,232	.....	.....	.....	340	811
Turkey in Europe	.....	274	.....	.....	.....	.....	.....	.....	.....	.....	.....	275	.....
England	1,961	47,888	6,142	27,633	11,798	23,934	11,804	9,516	2,566	2,289	1,179	6,601	7,926
Scotland	986	31	86	.....	960	2,941	1,376	754	.....	.....	.....	15,415	.....
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$17,709	$54,774	$9,100	$61,148	18,017	$39,623	78,015	$65,280	6,452	$6,459	$2,953	$74,206	$25,014
NORTH AMERICA													
Canada—Maritime Provinces	$2,514	$1,069	$154	.....	553	$1,365	50	$142	.....	.....	$717	$70	$12
Quebec and Ontario	7,282	9,455	6,412	$3,165	726	2,394	661	1,401	.....	.....	401	17,533	22,411
Prairie Provinces	.....	129	.....	.....	.....	.....	232	486	.....	.....	.....	1,069	20
Brit. Columbia and Yukon	9,617	175	255	39	812	3,415	165	384	100	$162	.....	370	410
British Honduras	.....	169	.....	.....	.....	.....	9	7	36	26	186	4	.....
Costa Rica	.....	496	.....	.....	.....	.....	48	32	.....	.....	609	.....	.....
Guatemala	.....	1,451	84	24	.....	.....	.....	.....	274	247	72	106	.....
Honduras	33	742	167	.....	.....	.....	201	260	406	429	100	413	.....
Nicaragua	121	241	569	.....	.....	.....	.....	.....	430	451	623	92	.....
Panama	481	969	.....	.....	.....	.....	.....	.....	1,942	1,262	377	856	110
Salvador	12	84	184	.....	.....	.....	.....	.....	.....	.....	94	146	.....
Mexico	14,546	14,262	6,998	.....	50	250	254	220	52,575	46,826	51,905	5,220	1,344
Miquelon and St. Pierre Island	18	.....	.....	.....	168	567	36	83	.....	.....	.....	.....	.....
Newfoundland and Labrador	2,010	1,002	483	.....	1,604	4,135	6,755	3,445	.....	.....	915	.....	.....
Bermuda	238	.....	.....	.....	1	4	151	189	164	140	233	.....	48
Barbados	.....	.....	189	.....	.....	.....	.....	.....	120	93	.....	.....	25
Jamaica	42	233	26	.....	.....	.....	.....	.....	3,199	3,368	666	421	101
Trinidad and Tobago	74	211	806	.....	.....	.....	.....	.....	403	311	152	.....	100
Other British West Indies	12	77	.....	.....	.....	.....	98	106	1,214	1,181	265	129	.....
Cuba	2,360	9,810	7,967	118	.....	.....	360	216	67,684	41,970	6,610	5,846	3,606
Dominican Republic	94	593	666	.....	.....	.....	1,044	856	3,640	2,965	324	203	296
Dutch West Indies	.....	1,075	14	.....	.....	.....	.....	.....	2,519	1,976	135	.....	45
French West Indies	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	133
Haiti	400	.....	.....	.....	.....	.....	24	20	168	121	39	.....	380
Virgin Islands of United States	.....	.....	.....	.....	.....	.....	96	91	1,543	1,479	250	.....	3
TOTALS, NORTH AMERICA	$39,872	$42,243	$24,972	$3,346	3,914	$12,630	10,184	$7,939	136,117	$103,007	$64,673	$32,478	$29,044
SOUTH AMERICA													
Argentina	$1,431	$5,299	$457	.....	.....	.....	.....	.....	51,533	$43,905	$1,937	$2,248	$6,901
Bolivia	1,485	106	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brazil	11,774	4,555	1,571	$811	.....	.....	651	$413	.....	.....	391	2,217	1,992
Chile	27,362	56,857	1,678	.....	.....	.....	.....	.....	575	415	585	5,666	994
Colombia	957	779	110	180	.....	.....	1,082	1,082	1,521	1,238	1,697	576	1,664
Ecuador	.....	.....	.....	.....	.....	.....	192	141	8,625	5,790	47	419	195
British Guiana	396	25	375	.....	.....	.....	.....	.....	1,440	1,383	.....	.....	26
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	384	357	.....	.....	.....
Paraguay	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	1,002	3,524	1,714	110	.....	.....	.....	.....	618	634	48	462	287
Uruguay	117	.....	.....	.....	60	$162	672	406	2,950	2,156	1,812	438	1,221
Venezuela	.....	422	410	.....	.....	.....	.....	.....	.....	.....	510	447	.....
TOTALS, SOUTH AMERICA	$44,524	$71,567	$6,315	$1,101	60	$162	2,597	$2,042	67,646	$55,878	$7,027	$12,473	$13,280
ASIA													
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	$477	$667	$249	.....	.....	.....	841	$544	213	$300	$285	$68	$196
Ceylon	.....	.....	.....	.....	.....	.....	.....	.....	120	110	.....	.....	15
Straits Settlements	2,480	10	15	.....	.....	.....	.....	.....	5,006	3,703	.....	144	.....
Other British East Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
China	540	690	.....	$1,021	.....	.....	1,872	1,715	400	310	.....	1,532	4,157
Chosen	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Java and Madura	276	.....	.....	.....	.....	.....	.....	.....	325	361	.....	.....	.....
Other Dutch East Indies	.....	534	.....	.....	.....	.....	.....	.....	39	30	.....	.....	.....
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hejaz, Arabia, etc.	.....	.....	.....	.....	100	$254	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	.....	.....	.....	48	191	526	396	.....	.....	39	.....	.....
Japan	2,458	1,842	9,952	5,394	180	236	3,530	2,803	18	18	.....	5,664	4,904
Palestine and Syria	.....	.....	42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Siam	.....	.....	.....	.....	.....	.....	.....	.....	240	211	.....	.....	.....
TOTALS, ASIA	$6,231	$3,743	$10,258	$6,415	328	$681	6,769	$5,458	6,361	$5,043	$324	$7,408	$9,272

United States by Countries During November, 1922

Waterproofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	All Other Rubber Manufactures Value	Totals Value
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$32
.....	1	$15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
.....	267	2,968	$52	.....	.....	2	$4	$5	.....	$1,603	.....	.....	.....	$1,817	15,432
.....	35	582	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	582
.....	2,341	31,334	2,302	8960	.....	1,755	2,751	.....	$159	4,346	.....	.....	.....	1,973	60,316
.....	2	119	.....	.....	.....	16	63	.....	.....	1,064	.....	.....	.....	266	1,506
.....	19	451	.....	.....	.....	5	26	.....	.....	.....	.....	.....	.....	386	4,373
.....	749	9,499	238	2,297	.....	20	116	.....	1,479	2,530	.....	.....	$6,720	5,171	82,925
.....	.....	.....	1,418	.....	.....	.....	.....	119	.....	.....	.....	.....	.....	.....	1,537
.....	44	674	.....	.....	.....	60	133	.....	.....	.....	.....	.....	.....	.....	807
.....	1,432	15,234	176	359	.....	628	1,050	21	338	87	.....	.....	.....	13	17,258
.....	6	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,338
.....	137	1,861	2,949	.....	.....	104	217	.....	613	.....	.....	.....	.....	2,366	25,613
.....	115	1,371	.....	.....	.....	146	246	.....	183	.....	.....	.....	.....	.....	1,800
.....	284	2,922	163	535	.....	56	120	146	21	238	.....	.....	.....	1,701	9,235
.....	626	11,541	152	4,160	.....	323	731	15	369	457	.....	.....	197	1,021	62,880
.....	50	356	.....	.....	.....	95	152	.....	7	.....	.....	.....	.....	.....	515
.....	644	9,517	1,421	250	.....	865	2,320	90	79	127	.....	.....	.....	6	14,476
$64	32	552	.....	.....	.....	100	307	.....	.....	.....	.....	.....	.....	.....	6,983
.....	621	12,488	.....	.....	.....	855	1,160	.....	.....	.....	.....	.....	.....	.....	14,348
.....	913	13,205	25	8,068	.....	1,208	1,973	.....	2,748	.....	.....	.....	.....	533	36,776
16	7,342	104,799	2,318	4,385	.....	3,317	9,633	181	549	.....	$122	.....	.....	3,089	142,863
.....	30	703	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000	9,196
.....	631	7,266	.....	.....	.....	504	2,269	.....	125	.....	.....	.....	.....	.....	10,209
40	21,808	176,098	1,299	19,029	$11	15,581	16,826	160	3,128	13,903	.....	$4,393	20,585	46,162	436,703
1,727	86	785	.....	.....	.....	.....	.....	.....	.....	328	.....	.....	.....	1,350	24,403
.....	1,003	8,113	1,327	.....	.....	656	828	357	.....	.....	.....	.....	.....	.....	10,625
$1,847	39,158	$412,493	$13,840	$40,923	$11	26,296	$40,925	$1,094	$9,798	$24,683	$122	$4,393	$27,502	$66,848	$1,000,745
$48	54	$802	.....	.....	.....	77	$102	.....	$43	$210	$60	$3	$152	$872	$8,833
1,957	3,013	39,862	.....	$11,122	$67	2,372	3,396	$268	1,163	13,151	6,318	3,973	7,735	59,522	218,988
134	439	2,683	.....	344	.....	324	299	.....	25	1,823	112	40	1,519	2,928	11,611
1,460	140	1,661	$18	694	4	34	66	.....	157	1,008	.....	.....	89	2,310	22,294
.....	35	293	23	.....	.....	102	164	2	.....	11	.....	17	.....	159	1,061
.....	52	847	.....	.....	47	32	64	.....	.....	.....	.....	.....	.....	9	2,104
.....	45	911	47	.....	.....	79	187	.....	.....	207	.....	46	.....	156	3,538
287	102	1,662	8	730	.....	30	91	.....	.....	41	.....	7	70	218	5,258
10	42	621	20	.....	286	72	122	.....	.....	8	.....	51	.....	182	3,397
28	662	9,251	542	437	116	1,140	1,503	203	78	254	270	.....	.....	983	17,720
2	106	2,371	.....	311	.....	102	214	.....	.....	.....	.....	.....	.....	.....	3,418
2,285	6,317	69,126	750	3,385	634	3,435	5,979	20	765	3,293	.....	2,379	2,373	25,214	257,774
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	668
157	.....	.....	.....	.....	.....	.....	.....	.....	.....	154	.....	.....	63	517	12,881
72	.....	.....	.....	.....	271	.....	.....	12	16	159	.....	.....	.....	144	1,526
.....	128	1,159	.....	227	.....	20	27	.....	.....	48	.....	.....	.....	.....	1,768
.....	282	3,432	398	3,204	31	86	221	51	73	64	.....	.....	93	171	12,595
.....	422	4,854	1,163	.....	28	678	1,259	168	130	.....	.....	.....	12	416	9,684
110	92	983	141	67	203	69	118	.....	21	.....	.....	52	182	10	3,657
2,683	5,333	58,106	1,798	26,401	910	3,941	8,013	.....	1,725	2,153	.....	287	406	12,385	193,370
66	869	8,215	.....	1,863	210	626	1,000	.....	138	27	.....	10	192	693	18,411
.....	78	713	.....	188	.....	54	80	.....	.....	.....	.....	20	.....	63	4,309
.....	76	765	.....	66	.....	44	62	.....	.....	.....	.....	.....	.....	.....	1,044
.....	280	3,340	15	94	.....	396	1,080	11	16	.....	.....	.....	.....	376	5,892
.....	48	444	152	.....	.....	133	181	24	.....	44	.....	.....	.....	.....	2,668
$9,299	18,615	$212,101	$5,075	$49,133	$2,807	13,846	$24,228	$759	$4,350	$22,655	$6,760	$6,885	$12,886	$107,328	$824,469
$552	11,061	$102,581	.....	$725	$1,463	8,648	$12,512	$336	$2,076	$1,580	$87	.....	.....	$5,350	$189,440
.....	188	3,498	.....	337	.....	184	466	.....	.....	87	.....	.....	$416	42	6,437
1,164	3,537	38,770	.....	3,161	.....	7,566	11,572	.....	816	119	.....	.....	.....	3,685	83,011
.....	727	13,941	$146	758	638	713	1,556	.....	345	214	.....	$61	904	3,136	115,256
316	999	15,995	16	514	903	983	1,850	110	262	580	.....	.....	69	673	29,571
.....	247	4,484	.....	.....	.....	298	652	156	45	.....	.....	.....	18	285	12,232
73	125	1,591	12	.....	75	95	157	.....	10	.....	.....	.....	.....	.....	4,123
.....	55	723	.....	.....	.....	56	115	.....	.....	.....	.....	.....	.....	40	1,235
.....	30	190	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	190
.....	1,052	14,390	402	564	.....	770	1,345	.....	.....	395	.....	497	.....	398	25,772
17	2,275	26,343	.....	.....	.....	834	1,649	.....	178	.....	26	.....	43	2,334	36,902
.....	730	8,736	10	131	.....	658	2,194	.....	75	192	.....	.....	162	934	14,223
$2,122	21,026	$231,242	$586	$6,190	$3,079	20,805	$34,068	$602	$3,807	$3,167	$113	$558	$1,612	$16,877	$518,392
.....	311	$2,666	.....	.....	.....	190	$281	.....	$19	.....	.....	.....	.....	.....	$2,966
.....	1,283	11,601	.....	$6,084	$2,979	473	815	$17	170	$1,088	$79	.....	.....	$623	26,242
.....	201	2,205	.....	758	608	86	180	.....	.....	.....	.....	.....	.....	42	3,918
.....	2,172	23,164	$198	5,057	.....	1,217	1,953	2	.....	155	.....	.....	.....	953	37,834
$58	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	.....	.....	.....	.....	72
175	793	9,268	.....	100	.....	400	695	.....	78	2,434	.....	.....	.....	420	23,135
.....	80	800	.....	.....	.....	120	200	.....	.....	.....	.....	.....	.....	.....	1,000
.....	228	3,664	.....	289	.....	383	816	161	.....	.....	.....	.....	.....	.....	5,567
.....	58	396	.....	.....	.....	62	85	.....	.....	.....	.....	.....	.....	36	1,081
.....	.....	.....	.....	.....	.....	.....	.....	.....	265	.....	.....	.....	.....	.....	265
.....	130	1,396	.....	.....	.....	240	489	.....	.....	.....	.....	.....	.....	.....	2,139
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23	.....	.....	.....	1,683	2,332
.....	641	11,361	.....	9,253	.....	17	105	.....	.....	717	.....	$47	.....	1,967	56,751
.....	1,380	14,906	.....	.....	.....	1,167	2,174	.....	431	.....	.....	.....	.....	728	18,281
.....	50	740	.....	.....	.....	121	363	.....	.....	.....	.....	303	.....	361	1,978
$233	7,327	$82,197	$198	$21,541	$3,587	4,476	$8,156	$180	$963	$4,431	$79	$350	.....	$6,813	$183,561

Exports of India Rubber Manufactures from the United

OCEANIA	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed and Auto Cloth and Auto Topping Value
Philippine Islands	$3,319	$3,945	$2,134	.....	.....	.....	.....	.....	34,884	$28,053	$5,590	$4,314	$2,680
Australia	2,650	4,225	2,209	.....	132	$546	.....	.....	312	793	565	23,228	8,245
British Oceania	.....	.....	.....	.....	.....	.....	200	$290	1,134	1,179	.....	.....	.....
French Oceania	.....	27	.....	.....	53	64	.....	.....	1,265	1,425	.....	.....	58
New Zealand	1,735	2,000	761	.....	295	1,004	.....	.....	72	207	1,771	487	1,141
Other Oceania	.....	.....	75	.....	.....	.....	.....	.....	314	461	.....	.....	.....
TOTALS, OCEANIA	$7,704	$10,197	$5,269	.....	480	$1,614	200	$290	37,981	$32,118	$7,926	$28,029	$12,124
AFRICA													
Belgian Kongo	.....	.....	$28	.....	1	$7	.....	.....	.....	.....	.....	.....	$24
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	81
British South Africa	$44,803	$19,648	2,605	$173	126	365	.....	.....	606	$619	$77	$4,404	1,489
British East Africa	566	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	333
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	226	82
Egypt	.....	32	83	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Algeria and Tunis	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other French Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	.....	139	186	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spanish Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	461
TOTALS, AFRICA	$45,369	$19,819	$2,902	$173	127	$372	.....	.....	506	$619	$77	$4,630	$2,470
GRAND TOTALS	$161,469	$202,343	$58,816	$72,183	22,926	$55,082	97,765	$81,008	255,463	$203,124	$82,980	$159,224	$91,204

Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.

United States Crude and Waste Rubber Imports for 1922 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1922	Totals 1921	Balata	Miscellaneous	Waste
January ..... *tons*	20,774	916	161	16	....	....	21,867	14,177	42	126	85
February	27,270	1,347	301	14	....	41	28,973	8,641	28	448	6
March	27,711	451	326	3	154	57	28,702	14,416	17	479	61
April	13,910	462	5	2	65	....	14,444	17,269	8	122	....
May	19,485	1,072	3	....	62	....	20,622	10,732	15	855	117
June	14,851	861	14	3	....	21	15,750	13,477	12	526	23
July	24,563	575	102	2	....	3	25,245	11,692	50	541	45
August	20,462	1,175	119	8	....	....	21,764	13,974	33	640	77
September	27,899	342	47	....	....	....	28,288	15,088	48	63	58
October	22,386	957	599	3	....	....	23,945	23,469	65	71	113
November	21,788	1,049	417	4	....	....	23,258	19,738	100	325	32
December	35,550	1,885	597	80	....	....	38,112	24,690	78	728	68
Totals, 12 months, 1922.. *tons*	276,649	11,092	2,691	135	281	122	290,970	....	496	4,924	685
Totals, 12 months, 1921.....	173,975	10,915	2,329	81	58	5	....	187,363	581	8,113	4,989

ARRIVALS OF PLANTATIONS BY PORTS FOR YEAR 1922

Baltimore ..... *tons*	1,767	New York ..... *tons*	265,496	Tacoma ..... *tons*	16
Boston	5,446	San Francisco	55	Vancouver	28
Los Angeles	3,474	Seattle	367	Totals ..... *tons*	276,649

Compiled by The Rubber Association of America, Inc.

Plantation Rubber Exports from Java and Madura

	October 1921	October 1922	Ten Months Ended October 31 1921	Ten Months Ended October 31 1922
To Netherlands ..... *bilos*	250,000	134,000	4,888,000	2,240,000
Netherlands, f. o.	.....	29,000	.....	673,000
Great Britain	410,000	269,000	6,808,000	3,937,000
Germany	100,000	156,000	480,000	1,061,000
France	.....	12,000	.....	227,000
Belgium	.....	.....	20,000	11,000
Italy	19,000	14,000	84,000	179,000
United States	1,772,000	2,316,000	9,265,000	15,254,000
Singapore	413,000	115,000	2,374,000	2,163,000
Japan	.....	.....	268,000	127,000
Australia	.....	.....	211,000	93,000
Other countries	57,000	.....	57,000	.....
Totals ..... *bilos*	3,021,000	3,045,000	24,455,000	25,965,000
Ports of origin:				
Tandjong Priok ..... *bilos*	1,189,000	1,533,000	10,683,000	11,114,000
Cheribon	.....	12,000	11,000	34,000
Samarang	50,000	105,000	391,000	630,000
Soerabaya	1,482,000	1,292,000	11,353,000	12,520,000
Banjouwangi	53,000	33,000	429,000	432,000
Tjilatjap	198,000	9,000	1,006,000	625,000

Plantation Rubber Exports from Malaya

	January 1 to November 30, 1922 Singapore Pounds	Malacca Pounds	Penang Pounds	January 1 to December 7, 1922 Port Swettenham Pounds	Totals Pounds
To United Kingdom	4,626,600	10,898,800	4,850,300	14,843,587	35,219,287
The Continent	21,498,500	3,578,700	4,665,900	812,313	30,555,413
Japan	29,565,900	2,004,800	285,600	.....	31,856,500
United States	271,455,300	32,473,500	35,602,900	6,412,190	345,943,890
British Possessions	4,864,800	.....	128,900	921,069	5,914,769
Other countries	369,800	.....	3,300	.....	373,100
Totals	332,380,900	48,955,800	45,536,900	22,989,159	449,862,759

British Malaya Rubber Exports

An official cablegram from Singapore reports that the exports of rubber from British Malayan ports in the month of December amounted to 41,276,500 pounds (18,427 tons) as against 21,642 tons in November and 18,354 tons in the corresponding month in 1921. Transhipments amounted to 1,787,200 pounds (798 tons) and foreign imports to 10,235,000 pounds (4,569 tons).

The total export of plantation rubber from British Malayan ports in 1922 was, approximately, 248,157 tons. Transhipments during the year amounted to about 21,838 tons.

States by Countries During November, 1922—*Continued*

	Pneumatic Casings			Solid Tires		Pneumatic Tubes			Druggists'		Hard Rubber Goods				
	Waterproof Clothing	Automobile				Automobile					Battery Jars and Accessories	Other Electrical Supplies		All Other Rubber Manufactures	
	Value	Number	Value	Others Value	Automobile Value	Others Value	Number	Value	Others Value	Tire Repair Materials Value	Rubber Sundries Value	Value	Value	Others Value	Value	Totals Value
	.....	3,266	$46,559	$582	$22,187	$2,755	3,353	$5,902	$604	$859	$2,351	$34	.....	.....	$9,249	$141,117
	.....	5,824	90,300	.....	13,477	.....	4,163	7,822	.....	2,693	1,599	45	.....	.....	3,490	161,977
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,469
	.....	6	104	.....	300	111	.....	.....	.....	13	.....	.....	.....	.....	.....	2,102
	$89	7,352	115,110	1,106	19,957	46	3,122	6,554	98	4,720	1,517	90	.....	.....	4,729	163,122
	.....	8	82	.....	.....	.....	.....	.....	.....	14	.....	.....	.....	.....	.....	632
	$89	16,416	$252,155	$1,688	$55,921	$2,912	10,638	$20,278	$702	$8,299	$5,467	$169	.....	.....	$17,468	$470,419
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$59
	.....	927	$18,517	.....	.....	.....	1,195	$3,847	.....	.....	.....	.....	.....	.....	$40	22,485
	.....	2,417	25,082	.....	$1,232	.....	1,075	1,576	.....	$100	$1,372	.....	$29	$675	2,459	106,708
	.....	414	5,026	$234	.....	.....	196	404	$109	.....	.....	.....	.....	.....	.....	6,672
	$120	579	5,899	.....	210	.....	343	417	.....	.....	.....	.....	.....	.....	.....	6,954
	.....	862	7,732	129	.....	.....	398	563	40	25	.....	.....	.....	.....	.....	8,604
	.....	.....	.....	.....	290	.....	23	44	.....	.....	.....	.....	.....	.....	.....	334
	.....	45	1,010	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,010
	.....	3	128	.....	.....	.....	5	19	.....	.....	.....	.....	.....	.....	.....	147
	.....	51	1,345	.....	.....	.....	42	122	.....	.....	.....	.....	.....	.....	26	1,493
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	329
	.....	68	1,411	.....	.....	.....	14	43	.....	.....	.....	.....	.....	.....	.....	1,454
	.....	56	680	104	7,285	.....	186	350	91	.....	.....	.....	.....	.....	.....	8,971
	$120	5,424	$66,830	$467	$9,017	.....	3,477	$7,385	$240	$125	$1,372	.....	$29	$675	$2,529	$165,220
	$13,710	107,966	$1,257,018	$21,854	$182,725	$12,396	79,538	$135,040	$3,577	$27,342	$61,775	$7,243	$12,215	$42,675	$217,863	$3,162,806

United Kingdom Rubber Statistics

Imports

	November, 1921		November, 1922	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements	1,502,400	£61,700	6,063,900	£287,551
Federated Malay States	3,666,400	165,131	2,349,600	108,823
British India	454,100	20,824	121,900	5,667
Ceylon and Dependencies	1,819,400	80,118	3,535,400	167,330
Other Dutch Possessions in Indian Seas	588,600	23,278	2,000	114
Dutch East Indies (except other Dutch Possessions in Indian Seas)	994,200	43,432	423,700	20,810
Other countries in East Indies and Pacific, not elsewhere specified	89,500	4,055	59,100	2,847
Brazil	232,800	13,705	623,900	29,113
Peru	.....	.....	14,600	600
West Africa				
French West Africa	500	23	.....	.....
Gold Coast	100	4	.....	.....
Other parts of West Africa	900	47	23,500	911
East Africa, including Madagascar	22,000	850	14,700	592
Other countries	30,600	1,423	9,700	602
Totals	9,401,500	£414,590	13,242,000	£624,960
Waste and reclaimed rubber	63,300	695	39,100	728
Gutta percha and balata	1,125,800	202,652	1,186,800	172,705
Rubber substitutes	28,400	653	.....	.....
Totals, unmanufactured	10,619,000	£618,590	14,467,900	£798,393
MANUFACTURED				
Boots and shoes....*doz. pairs*	3,396	£12,276	3,279	£11,251
Tires and tubes.....*number*	211,856	474,763	198,189	266,913
Other rubber manufacturers	.....	56,585	.....	80,075
Totals, manufactured	.....	£543,624	.....	£358,239
Waterproof clothing..*number*	2,003	£1,652	156	£158
Insulated wire	.....	6,780	.....	11,299
Submarine cables	.....	.....	.....	.....

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	561,900	£8,010	270,200	£4,352
Rubber substitutes	71,600	1,752	105,700	2,417
Totals, unmanufactured	633,500	£9,762	375,900	£6,769
MANUFACTURED				
Boots and shoes....*doz. pairs*	10,555	£22,892	16,296	£28,042
Tires and tubes.....*number*	147,039	154,353	195,268	148,000
Other rubber manufacturers	.....	207,489	.....	250,783
Totals manufactured	.....	£384,734	.....	£426,825
Waterproof clothing..*number*	64,140	£82,930	101,363	£115,001
Insulated wire	.....	45,693	.....	88,764
Submarine cables	.....	42,028	.....	51,255

Exports—Colonial and Foreign

	November, 1921		November, 1922	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
To Russia	.....	.....	801,700	£33,419
Sweden, Norway and Denmark	72,300	£2,311	24,500	1,291
Germany	1,133,000	41,516	611,600	25,383
Belgium	423,100	16,308	194,000	8,406
France	2,024,000	80,312	1,691,500	75,022
Spain	62,000	3,279	26,600	1,316
Italy	283,800	12,133	420,000	15,624
Other European countries	306,500	11,481	86,600	4,400
United States	6,867,500	252,169	6,465,400	244,722
Canada	48,300	1,990	179,100	5,929
Other countries	18,000	1,270	121,100	5,753
Totals	11,238,500	£422,769	10,622,100	£421,265
Waste and reclaimed rubber	15,400	501	10,000	90
Gutta percha and balata	38,500	7,375	89,700	12,803
Rubber substitutes	11,100	365	.....	.....
Totals, unmanufactured	11,303,500	£431,010	10,721,800	£434,158
MANUFACTURED				
Boots and shoes....*doz. pairs*	749	£2,277	475	£1,289
Tires and tubes.....*number*	15,633	48,623	2,942	6,527
Other rubber manufactures	.....	2,938	.....	5,163
Totals, manufactured	.....	£53,838	.....	£12,979
Waterproofed clothing..*number*	2	£7	.....	.....
Insulated wire	.....	40	.....	.....
Submarine cables	.....	.....	....	.....

United Kingdom Rubber Imports and Exports

Imports

	November			Eleven Months Ended November 30		
FROM	1922	1921	1920	1922	1921	1920
Straits Settlements and Federated Malay States..*tons*	3,756	2,308	6,173	35,233	45,701	55,806
Ceylon and British India	1,633	1,015	2,381	11,873	17,208	24,667
Dutch East Indies, etc	216	746	1,751	6,383	14,252	11,429
Brazil and Peru	285	104	531	3,413	1,878	8,238
Other countries	21	24	106	528	608	2,967
Totals .....*tons*	5,911	4,197	10,942	57,430	79,647	103,107

Exports

TO						
United States .....*tons*	2,886	3,066	30	21,662	18,022	24,814
Canada	79	21	157	1,166	135	3,134
France	755	903	290	11,803	6,882	11,599
Belgium	87	189	95	1,028	1,097	2,075
Italy	187	127	45	2,277	1,248	2,568
Spain	12	28	34	354	160	205
Germany, Austria, Hungary	273	506	864	6,659	7,345	4,857
Russia	358	.....	17	2,981	163	58
Sweden, Norway and Denmark	11	32	131	477	717	1,126
Other countries in Europe	39	137	182	898	2,514	961
Other countries	55	8	50	371	54	1,042
Totals .....*tons*	4,742	5,017	1,895	49,676	38,337	52,439

Compiled by the Rubber Trade Association of London.

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	October, 1921		October, 1922	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Rubber, gutta percha, etc.				
From United Kingdom	55,870	$7,300	362,603	$51,065
United States	1,418,013	219,612	637,391	92,363
Brazil	106,314	20,000	.....	.....
British East Indies				
Straits Settlements	369,563	63,096	717,028	102,614
France	110	112	.....	.....
Totals	1,949,870	$310,120	1,717,022	$246,042
Rubber, recovered	99,962	9,413	99,681	8,611
Rubber, powdered, and rubber or gutta percha scrap	76,749	5,234	243,974	6,872
Balata	.....	.....	23,858	3,237
Rubber substitutes	24,406	6,483	15,301	3,134
Totals, unmanufactured	2,150,987	$331,250	2,099,836	$267,896
PARTLY MANUFACTURED				
Hard rubber sheets and rods	271	$342	723	$538
Hard rubber tubes	.....	3,933	.....	4,381
Rubber thread not covered	9,880	10,657	9,873	10,638
Totals, partly manufactured	10,151	$14,932	10,596	$15,557
MANUFACTURED				
Belting	.....	$2,917	.....	$15,048
Hose	.....	10,862	.....	8,282
Packing	.....	4,093	.....	3,758
Boots and shoes *pairs*	.....	14,306	3,112	7,884
Clothing, including waterproofed	.....	10,536	.....	13,219
Gloves	.....	1,142	.....	1,650
Hot water bottles	.....	640	.....	1,889
Tires, solid	.....	17,592	.....	8,745
Tires, pneumatic	.....	31,904	.....	40,318
Inner tubes	.....	6,820	.....	3,294
Elastic, round or flat	.....	30,435	.....	34,734
Mats and matting	.....	650	.....	953
Cement	.....	2,978	.....	5,249
Other rubber manufactures	.....	83,406	.....	96,575
Totals, manufactured	.....	$218,281	3,112	$241,598
Totals, rubber imports	2,161,138	$564,463	2,110,432	$525,051

Exports of Domestic and Foreign Rubber Goods

	October, 1921		October, 1922	
	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$3,954	.....	$9,302	.....
MANUFACTURED				
Belting	$6,255	.....	$8,441	.....
Canvas shoes with rubber soles	17,346	.....	28,967	.....
Boots and shoes	45,144	.....	98,034	.....
Clothing, including waterproofed	92	.....	2,243	.....
Hose	18,243	.....	6,826	.....
Tires, casings	.....	.....	382,387	.....
inner tubes	.....	.....	37,464	.....
pneumatic	191,318	.....	.....	.....
solid	12,372	.....	15,521	.....
vehicle	.....	$625	.....	$406
Other rubber manufactures	12,131	2,335	18,534	3,283
Totals, manufactured	$302,901	$2,960	$598,417	$3,689
Totals, rubber exports	$306,855	$2,960	$607,719	$3,689

The Market for Rubber Scrap

New York

During the last of December rubber scrap was firm and buying at a minimum, boots and shoes being the most active grade. In the first three weeks in January the demand in general for scrap was rather quiet, with prices showing slightly more strength, especially for boots and inner tubes, although the prices were not satisfactory to dealers.

The strength of crude rubber has made holders of scrap unwilling sellers, as further advances are looked for. Boots and shoes were in good request at above 4 cents a pound delivered to reclaimers. Inner tubes have advanced during the month to practically 5½ cents a pound delivered to reclaimers. Mixed tires are quiet. Mixed hose is the principal mechanical grade of scrap in request, selling at 1 to 1½ cents a pound.

The active demand for reclaims is gratifying alike to reclaimers and scrap dealers and both are preparing for a growing volume of business lasting well into the year.

Quotations for Carload Lots Delivered

January 25, 1923
Prices subject to change without notice

Boots and Shoes		
Boots and shoes, black	*lb.*	$0.04¼ @ $0.04½
Trimmed arctics	*lb.*	.03¼ @ .03½
Untrimmed arctics	*lb.*	.02¾ @ .03
Hard Rubber		
Battery jars, black compound	*lb.*	.01¾ @ .02
No. 1 scrap	*lb.*	.14 @ .15
Inner Tubes		
No. 1	*lb.*	.05 @ .05½
Compounded red	*lb.*	.04¼ @ .04½
Mechanicals		
Black scrap, mixed	*lb.*	.01½ @
Heels	*lb.*	.02½ @ .03
Horse-shoe pads	*lb.*	.02½ @ .03
Hose, air brake	*lb.*	.01 @ .01½
regular	*lb.*	.01 @
Red scrap, mixed	*lb.*	.07 @ .08
White scrap, mixed	*lb.*	.07 @ .07½
Tires		
Pneumatic		
Auto peelings	*lb.*	.01¾ @ .02
Bicycle	*lb.*	.01 @ .01¼
Standard white auto	*lb.*	*.02¼ @ .02¾
Mixed auto	*lb.*	.00¾ @ .01
Stripped, unguaranteed	*lb.*	*.01 @ .01½
Solid		
Carriage	*lb.*	.02¾ @ .03
Irony	*lb.*	.075 @
Truck, clean	*lb.*	.02 @ .02½

*Nominal.

TELESCOPED BARRELS

Telescoped Barrels

Those who pack compounding ingredients, fittings, boot and shoe hardware, and other supplies in bulk for the use of the rubber manufacturing industry as well as those who ship their rubber products in bulk will appreciate the economy in freight and storage rooms made possible by the use of barrels which may be telescoped as here illustrated where fourteen are shown stacked in one space-saving pile.

An ordinary workman, with aid of bench, pedal rope and tools is able to finish three hundred to six hundred barrels a day from the telescoped form.

The barrels are very snugly telescoped, as shown in the picture, where it will be observed that one stave stands above the others. This is the key stave which is used between barrels as a separator. A slight loosening of this key releases the first barrel and so on through the column without binding or wedging. Barrels in this form save time, space, insurance, trouble and money.—The Sandusky Cooperage & Lumber Co., Toledo, Ohio.

M. & A. M. A. CHICAGO MEETING

An interesting program was prepared for the Chicago meeting, on January 31, of the Advertising Managers' Council, the session being held in the Rose Room of the Congress Hotel, Chicago, Illinois, E. W. Clark, of the Clark Equipment Co., presiding. The theme of the conference was, "How Can the Parts and Accessory Manufacturers Aid in the Development of the Market for Specialized and Fully Equipped Cars and Trucks?"

The Market for Chemicals and Compounding Ingredients

New York

BUSINESS in many lines of rubber compounding ingredients has assumed increased activity especially in those materials that enter into the manufacture of tires, heels, and mechanical goods. Even in those lines where consumption is routine the outlook is for a good volume of trade, since nearly or quite all branches of the rubber industry have started the new year on approximately full time schedules.

Inadequate railway transportation facilities continue to restrict deliveries of raw materials in all sections. This condition pertains not only to shipments of carbon black, barytes, and clay into the Ohio and the Midwest but from nearby eastern sections into New England.

ANILINE. Stocks are sold ahead in active demand although supplies are increasing in volume steadily.

BARYTES. A moderate price advance took place early in January. Increase of interest has developed. Poor freight service is hampering deliveries.

BENZOL. Prices are high and spot stocks are increasing in volume.

BLANC FIXE. Business is routine, influenced much as in the case of barytes.

CARBON BLACKS. The general appreciation by rubber manufacturers of carbon black as a vital element in tire tread stocks is causing producers of blacks to further develop their plants, the geographical location of which operates as a serious drawback to deliveries in consuming centers in view of inadequate freight facilities.

CHINA CLAY. The rubber trade has become a large consumer of clay and promises to become larger as manufacturers of tires, heels, and other goods characterized by toughness and resistance to abrasive wear come to realize its technical and economic value.

DRY COLORS. During and since the holiday season, business has been rather dull. The prospects are good for early revival of interest on the part of consumers.

LITHARGE. An advance in price of a fraction of a cent a pound took place with the turn of the year. Rubber makers are placing liberal orders.

LITHOPONE. Sales are said to equal domestic production for six months ahead. A new price level was established early in the month by an advance of ½ cent a pound. A shortage of lithopone may be experienced later on, with increase of users' dependence on this material.

SUBLIMED LEAD. Just previous to entering the new year an advance was made from 8 to 8½ cents a pound. Trade prospects are reported better than a year ago, although business is quiet.

SULPHUR. The usual steady routine movement prevails with sulphur, the one really basic rubber compounding ingredient.

TALC. Both domestic and foreign stocks are kept down to normal or under by continuous and liberal requirements of the rubber and other trades.

WHITING. The market is quiet and on a normal routine basis.

ZINC OXIDE. A large volume of business is reported booked for this year. About January 1 prices advanced ½ cent a pound.

New York Quotations

January 25, 1923

Prices subject to new tariff revision

Accelerators, Organic			
Accelerene (f. o. b. English port)	lb.	13s.	@
Accelemal	lb.		@
Aldehyde ammonia crystals	lb.	$0.93	@
Aniline (f. o. b.) factory	lb.	.16½	@ .20
Diphenylguanidine	lb.	1.20	@ 1.50
Ethylidene aniline	lb.	.75	@ .90
Excellerex	ton	17.00	@
Formaldehyde aniline	lb.	.51½	@
H. R.	lb.		@
Hexamethylene tetramine	lb.	.95	@ .97½
Lead oleate (bbls.)	lb.	.14	@
Methylene aniline	lb.	.38	@ .44
Methylene paratoluidine	lb.	1.35	@
N. C. C.	lb.		@
No. 500 Rubber	lb.		@
No. 801 Rubber	lb.		@
No. 999	lb.	.15	@
Paradin	lb.	.37	@
Paraldehyde	lb.	.31	@ .32
Paraphenylene diamine	lb.	1.50	@ 1.55
Super-sulphur, No. 1	lb.	.50	@ .60
No. 2	lb.	.25	@ .30
Super-X	lb.	.50	@
Super-XX	lb.	.80	@
Tetramethylthiuramdisulphide	lb.	6.00	@
Thiocarbanilide	lb.	.28	@ .40
Vul-Ko-Cene	lb.		@
XLO	lb.		@
Accelerators, Inorganic			
Lead, red	lb.	.10¾	@
sublimed blue	lb.	.08½	@
sublimed white	lb.	.08½	@
Lime, flour, superfine	lb.	.02	@ .02½
Litharge, domestic	lb.	*.08½	@ .10¾
imported	lb.	*.17	@
Magnesia, carbonate, light	lb.	.08	@ .09
calcined, light (bbls.)	lb.	.20	@ .24
calcined, ex. light (bbls.)	lb.	.45	@
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.04¾	@ .05
oxide, heavy	lb.	.05	@ .06
Orange mineral A. A. A.	lb.	.13½	@
Acids			
Acetic 28% (bbls.)	cwt.	3.17½	@ 3.92½
glacial, 99%	cwt.	12.05	@12.85
Cresylic (97% straw color)	gal.	.60	@ .63
(95 dark)	gal.	.60	@ .65
Sulphuric, 66 degrees	ton	14.00	@16.00
Alkalies			
Caustic soda	lb.	.03½	@ .03¾

*Nominal.

Colors			
BLACK			
Bone, powdered	lb.	$0.05½	@$0.07½
Carbon black	lb.	.18	@ .24
pressed	lb.	.19	@ .25
Dipped goods	lb.		@
Drop	lb.	.07½	@ .16
Gritless black	lb.	.40	@
Hyposulphite of lead	lb.		@
Iron oxide	lb.	.04½	@ .16
Ivory black	lb.	.15	@ .45
Lampblack	lb.	.12	@ .40
Micronex	lb.		@
BLUE			
Cobalt	lb.	.21	@ .26
Dipped goods	lb.		@
Gritless blue	lb.	3.50	@
Prussian	lb.	.55	@ .60
Ultramarine	lb.	.10	@ .35
BROWN			
Iron Oxide	lb.	.05	@ .06
Sienna, Italian	lb.	.07	@ .08¾
Umber, Turkey	lb.	.05	@ .06
Vandyke	lb.	.06	@ .07
GREEN			
Chrome, light	lb.	.30	@ .32
medium	lb.	.35	@ .36
dark	lb.	.36	@ .45
commercial	lb.	.12	@
tile	lb.	.11	@ .13
Dipped goods	lb.		@
Gritless green	lb.	3.50	@
Guignet	lb.		@
Oxide of chromium	lb.	.55	@
RED			
Antimony, crimson, T. K.	lb.	$0.50	@
crimson, 15/17% free	lb.	.34	@ .48
crimson, R.M.P. No. 3	lb.	.50	@
crimson F	lb.	.35	@
Antimony, golden, T. K.	lb.	.23	@
golden R.M.P. No. 7	lb.	.21	@
golden, 15/17% free	lb.	.18	@ .24
golden, No. 1	lb.	.30	@
golden, No. 2	lb.	.25	@
7-A	lb.	.35	@
vermilion, T. K.	lb.	.55	@
vermilion 15/17% F. S.	lb.	.55	@
vermilion 5% F. S.	lb.	.65	@
red sulphuret	lb.	.20	@
Arsenic sulphide, red	lb	.15	@ .16
lemon	lb.		@
orange	lb.		@
Cadmium sulphide, red	lb.		@
Dipped goods red	lb.		@
purple	lb.		@
orange	lb.		@
Gritless red (four shades)	lb.	3.50	@
purple	lb.	2.50	@
Indian	lb.	.08	@ .12
Indian maroon, English	lb.	.12	@ .15
Iron oxide, reduced	lb.	.12	@
pure bright	lb.	.14	@
Maroon oxide	lb.	.08	@ .12
Red oxide, crimson	lb.		@
English	lb.		@
Spanish	lb.	.03½	@ .04¼
Oximony	lb.	.16	@
Para toner	lb.		@
Spanish natural	lb.	.03½	@ .04½
Toluidine toner	lb.	2.10	@ 2.25
Venetian	lb.	.03½	@ .06
Vermilion, American	lb.	.25	@ .30
English quicksilver	lb.	1.35	@ 1.40
WHITE			
Albalith	lb.		@
Aluminum bronze	lb.	.55	@ .60
Lithopone, domestic	lb.	.06½	@ .07
Red Seal, imported	lb.	.06	@ .06¼
Zinc oxide:			
American Horse Head Special	lb.	.06	@ .08½
XX red	lb.	.07½	@ .08

Colors—*Continued*

WHITE—*Continued*

French process, Florence			
Green seal	lb.	$0.10¼ @	$0.10¾
Red Seal	lb.	@	
White seal	lb.	.11½ @	.11¾
Azo (factory):			
ZZZ (lead free)	lb.	.07½ @	.08
ZZ (—5% leaded)	lb.	.06¾ @	.07¼
Z (8.10% leaded)	lb.	.06½ @	.07
Zinc sulphide	lb.	@	

YELLOW

Arsenic, yellow	lb.	@	
Cadmium, sulphide, light	lb.	@	
Chrome, light and med.	lb.	.17 @	.18
Dipped goods	lb.	@	
Gritless yellow	lb.	3.50 @	
India rubber	lb.	.87½ @	
Ochre, domestic	lb.	.02 @	.03½
imported	lb.	.03 @	.03¾

Compounding Ingredients

Aluminum flake (carloads)	ton	25.00	@29.00
hydrate, light	lb.	.18 @	.20
Ammonia carbonate	lb.	.10½ @	.11¼
Asbestine	ton	20.00 @	
Aluminum silicate	ton	24.00	@26.00
Barium, carbonate, precip.	ton	75.00	@80.00
dust	ton	100.00 @	
Barytes, pure white C. L.	ton	23.90 @	
off color (carloads)	ton	20.00 @	
uniform floated (carloads)	ton	23.90 @	
Basofor	lb.	.04¼ @	
Blanc fixe	lb.	.04¼ @	.04½
Carrara filler (factory)	lb.	.01½ @	
Chalk, precip. extra light	lb.	.03½ @	.04¼
heavy (f.o.b. factory)	lb.	.02½ @	.03¼
China clay, Dixie	ton	22.00	@32.00
Blue ribbon (carloads)	ton	14.00 @	
Blue Ridge	ton	20.00	@30.00
Cotton flock, black	lb.	.12 @	.13
light-colored	lb.	.12 @	.13
white	lb.	.15 @	.21
Cotton linters clean mill-run	lb.	.06½ @	
Fossil flour (powdered)	ton	60.00 @	
(bolted)	ton	60.00 @	
Glue, high grade	lb.	.30 @	.40
medium	lb.	.20 @	.26
low grade	lb.	.16 @	.19
Graphite, flake	lb.	.05 @	
amorphous	lb.	.05 @	
Infusorial earth (powd.)	ton	60.00 @	
(bolted)	ton	65.00 @	
Mica, powdered	lb.	*.15 @	
Pumice stone, powdered	lb.	.03 @	.05
Rotten st., powd. (bbls.)	lb.	.02½ @	.04½
Silica, gold bond (factory)	ton	@	
silver bond (factory)	ton	@	
Soap bark, cut	lb.	.08 @	
Soapstone, powdered, gray	ton	12.00 @	
Sodium bicarbonate (bbls.)	lb.	.02¼ @	
Starch, powd. corn (bags)	cwt.	2.82 @	2.92
(bbls.)	cwt.	3.10 @	3.20
Talc, soapstone	ton	15.00	@20.00
Terra blanche	ton	25.00	@27.50
Tripoli flour, cream or rose	ton	@	
white (factory)	ton	@	

*Nominal.

Chemical Market—*Continued*

New York Quotations

January 25, 1923

Prices subject to new tariff revision

Tyre-lith	ton	$80.00	@$85.00
Whiting, Alba	cwt.	@	
chalk	ton	@	
commercial	cwt.	1.00 @	1.25
Danish (factory)	ton	@	
English cliffstone	cwt.	1.50 @	2.00
gilders (bolted)	cwt.	1.10 @	
K. T.	ton	@	
Paris, white, American	cwt.	1.25 @	1.50
Perfection (carloads)	ton	14.00 @	
Plymouth	ton	@	
Quaker	ton	13.00	@15.00
Superfine	ton	@	
Wood pulp, XXX	ton	35.00 @	
X (f.o.b. factory)	ton	25.00 @	

Mineral Rubber

Gilsonite	ton	65.00 @	
Genasco (factory)	ton	50.00	@52.00
Hard hydrocarbon	ton	33.00	@42.00
Liquid rubber	lb.	.15 @	
Soft hydrocarbon	ton	32.50	@38.00
320/340 M. P. hydrocarbon	ton	@	
300/310 M. P. hydrocarbon	ton	@	
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granular	ton	52.00	@54.00
Robertson, M. R., solid	ton	35.00	@75.00
M. R. granular (factory)	ton	54.50	@72.50
Rubrax (factory)	ton	60.00 @	
States "A"	ton	@	
No. 1	ton	@	
Synpro, gran. M. R. (fac.)	ton	55.00	@75.00

Oils

Avoilas compound	lb.	@	
Castor, No. 1, U. S. P.	lb.	.12½ @	
No. 3, U. S. P.	lb.	.12½ @	
Corn	lb.	.11 @	
Cotton	lb.	.11½ @	
Glycerine	lb.	.18¼ @	.19
Halowax (500-lb. drums)	lb.	.25 @	.27
Linseed, raw	gal.	.93 @	
Palm lagos	lb.	.08 @	.08½
Palm, niger	lb.	.07¾ @	
Peanut	lb.	.15 @	
Petrolatum, standard	lb.	.05 @	.08
Petrolatum, sticky	lb.	.08 @	.10
Pine, steam distilled	gal.	.78 @	.83
Rapeseed, refined	gal.	.83½ @	
blown	lb.	.12½ @	
Rosin	gal.	.40 @	.50
Synpro	gal.	.40 @	.80
Soya bean	lb.	.12 @	
Tar	gal.	.25 @	.29

Resins and Pitches

Cumar resin hard	lb.	@	
soft	lb.	@	
Tar, pine, retort	bbl.	$11.00	@$12.00
kiln	bbl.	12.90	@13.00
Pitch, Burgundy	lb.	.05 @	
coal tar	lb.	.01¾ @	
Fluxol hardwood	ton	40.00	@60.00
pine tar	lb.	.03 @	
ponto	lb.	.07½ @	
Rosin, K (bbl.)	280 lbs.	6.65 @	
strained (bbls.)	280 lbs.	6.50 @	
Shellac, fine orange	lb.	*.90 @	

Solvents

Acetone (98.99% drums [6.62 lbs. per gal.])	lb.	@	
Benzol (90%, drums [7.21 lbs. per gal.])	gal.	@	
pure (drums)	gal.	.42 @	
Carbon bisulphide (dms. [10.81 lbs. per gal.])	lb.	.06¾ @	.07
tetrachloride (drums. [13.28 lbs. per gal.])	lb.	.10 @	.10½
Motor gasoline (steel bbls.)	gal.	.22 @	
Naphtha, V. M. & P.	gal.	.21 @	
solvent (drums extra)	gal.	.23 @	
Cymene (factory)	lb.	.15 @	
Toluol, pure (7.21 lbs. per gal.)	gal.	@	
Turpentine, spirits	gal.	1.53 @	
wood, steam distilled	gal.	1.45 @	

Substitutes

Black	lb.	.08 @	.13
Brown	lb.	.09 @	.15
White	lb.	.09 @	.16
Brown factice	lb.	.08 @	.16
White factice	lb.	.09 @	.16

Vulcanizing Ingredients

Black hypo, T. K., S. F.	lb.	.20 @	
13%	lb.	.22 @	
Sulphur chloride (drums)	lb.	.08 @	
(jugs)	lb.	.13½ @	
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.55 @	2.90
(bags)	cwt.	2.30 @	2.65
Sulphur flour (bbls.)	cwt.	2.60 @	3.15
(bags)	cwt.	2.35 @	2.90
Superfine 100% pure	cwt.	@	

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	lb.	.45 @	
ceresine, white	lb.	.12 @	
carnauba	lb.	.20 @	
montan	lb.	.04 @	.04½
ozokerite, black	lb.	.18 @	
green	lb.	.26 @	.28
paraffine	lb.	.02¾ @	.04¾
sweet wax	lb.	.10 @	.12

Miscellaneous

Saturating material	lb.	.03 @	.04
Finishing material	lb.	03½ @	.06

RUBBER HOSE IN CONCRETE PIPE TESTING

Concrete pipe of large caliber, such as is largely used in western irrigating systems, is given a severe test and buyers are shown

Hydrostatic Test of a Wet Mix Pipe

the difference between good and bad pipe when water under heavy pressure is forced into the pipe sections by means of rubber hose. Watertight drums are affixed to the ends of the pipes and the water is run into the closed cylinder through a hose attached to a nearby faucet.

In a hydrostatic test made by the director of a farm center in California a "wet mix" pipe, such as shown in the illustration, showed seepage at 40 pounds pressure and breakage at 75 pounds. A "dry mix" pipe, however, showed seepage at 2 pounds and broke at 5 pounds pressure, proving its unsuitability. The ordinary irrigating pressure seldom exceeds 20 pounds.

ADVANCE IN CANADIAN TIRE PRICES

During the first week in January, and as the result of an agreement between leading tire manufacturers, the prices of Canadian tires advanced 15 per cent, while a still further increase followed January 20. The new price schedule particularly affects the larger makes of tires, which will sell from $6 to $9 more than formerly. Tires for small cars will be $1 higher. These changes are due, it is claimed, to the advance in the cost of cotton and crude rubber, the latter commodity being approximately 100 per cent higher than a few months ago.

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. During the holiday season and until January 12 spot middlings fluctuated between 26.45 and 26.80. Since that date the market has experienced a strong upward movement, practically continuous except for a decline on the 16th, quotations reaching 28.75 on January 24.

Higher prices for cotton are predicted, owing to the short supply of American cotton apparently available as compared with all previous views of the world's requirements, the cultural difficulties, and the short supply of cotton goods outside of this country, particularly in Europe, which is believed to be very much below the pre-war normal. The world's visible supply of cotton is estimated at 5,211,266 bales, a decline of 1,095,246 bales from 1921, and 1,347,998 bales from 1920.

Constructive plan to eradicate the boll weevil and save the crop of 1923 has been launched by the American Cotton Association backed by government officials, scientists of note, and chief factors of allied industries throughout the country. Research headquarters are located at Atlanta, Georgia, and active laboratory and field work is now in progress.

EGYPTIAN COTTON. Early in the month there was a moderate demand on the spot market in medium and low grades of uppers and Sakellaridis. Medium uppers at that time were at 32⅛ cents a pound, advancing the middle of the month to 34⅞ cents, and one week later advancing to 36⅞ cents.

Sakels are relatively somewhat cheaper, medium grades being worth 37 cents. The general opinion is that the total Egyptian crop will reach between 5¼ and 5½ million cantars. Regarding new crop planting it seems probable that the acreage will be increased and that more attention will be given to growths other than Sakels.

ARIZONA COTTON. Pima prices are firm but business is only moderate. There is considerable talk of reducing the area planted to Pima during the coming season and substituting peelers. Prices during the month showed slight change from 37½ cents for No. 1 to 36½ cents for No. 2.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market in cotton fabrics during the past month has shown marked increased activity of demand and volume of sales in the general line. Large users of fabrics not already covered for the first six months are liable to experience more or less difficulty in engaging for their necessities. Advances in price predicted early last fall for spot and future delivery in the cloth market have not depended solely on the rise in raw material.

RAINCOAT FABRICS. Business has been fairly good, with a steady demand for goods but in small quantities only. Advances in price have been moderate over those of last month, ruling ¼ cent a yard more for bombazines, plaids, and surface prints.

SHEETINGS. The market on sheetings is very firm, with tendency to advance owing to the rise in raw cotton. Many numbers are sold up to April. The demand is quite active but the supply insufficient, especially in the weights in general use by the rubber trade.

TIRE FABRICS. Tire fabrics in all grades, both cord and square woven, are quoted at prices above those of a month ago, the increase on builder fabric averaging 3 cents a pound and on cords 1½ cents a pound. Further advances are looked for with the placing of January orders by tire manufacturers. These advances are the combined result of shortage in the supply of raw cotton and the demand figured on the prospective output of 45,000,000 tires for 1923.

New York Quotations

January 25, 1923

Prices subject to change without notice

Burlaps			
40—7-ounce	100 yds.		@
40—7¼-ounce		$7.35	@$7.40
36—8-ounce			@
40—8-ounce		7.40	@ 7.50
40—10-ounce		8.95	@ 9.00
40—10½-ounce		9.00	@ 9.10
Drills			
38-inch 2.00-yard	yard	.25	@
40-inch 3.47-yard		.14¼	@
52-inch 1.90-yard		.27⅞	@
60-inch 1.52-yard		.35½	@
Duck			
CARRIAGE CLOTH			
38-inch 2.00-yard	yard	.25¼	@
40-inch 1.47-yard		.34¼	@
72-inch 16.66 ounce		.67⅛	@
72-inch 17.21-ounce		.68⅞	@
MECHANICAL			
Hose	pound	.51	@
Belting		.50	@
Osnaburgs			
40-inch 2.35-yard	yard	.21¼	@
40-inch 2.48-yard		.20⅝	@
40-inch 3.00-yard		.17	@
37½-inch 2.42-yard		.21½	@
Tennis			
51-inch 1.35-yard	yard	.40	@
Hollands			
DEAD FINISH			
Standard, 37-inch, white and colors	yard	.19½	@
42-inch, white and colors		.23½	@
FLAT FINISH			
Imperial, 36-inch, white and colors		.15½	@
40-inch, white and colors		.17½	@
Raincoat Fabrics			
COTTON			
Bombazine 64 x 60	yard	.14	@
60 x 48		.13	@
Cashmeres, cotton and wool, 36-inch, tan		.55	@
Plaids 60 x 48		.13½	@
56 x 44		.12¾	@
Surface prints 60 x 48		.14¼	@
64 x 60		.15¼	@
Sheetings, 40-inch			
48 x 48, 2.50-yard	yard	.20	@ .20½
48 x 48, 2.85-yard		.16½	@ .17
64 x 68, 3.15-yard		.16¼	@ .16½
56 x 60, 3.60-yard		.14	@ .14¼
48 x 44, 3.75-yard		.13½	@ .14
44 x 44, 5.50-yard		.10¼	@
Sheetings, 36-inch			
48 x 48, 5.00-yard	yard	.09	@
40 x 40, 6.00-yard		.08½	@
44 x 40, 6.00-yard		.08½	@
Silks			
Canton, 38-inch	yard	.35	@
Schappe, 36-inch		.47½	@
Tire Fabrics			
BUILDING			
17½-ounce Sakellaridis, combed	pound	.85	@
17¼-ounce Egyptian, combed		.75	@
17¼-ounce Egyptian, carded		.69	@
17¼-ounce Peeler, combed		.66	@
17¼-ounce Peeler, carded		.60	@
CORD			
15-ounce Egyptian, combed	pound	.78	@
15-ounce Egyptian, carded		.72	@
2½-pick Peeler, carded		.67	@
BICYCLE			
8-ounce American	pound		@
10-ounce American			@
BREAKER			
Leno, Peeler, carded		.64	@
CHAFER			
9¼-ounce Egyptian, carded	pound	.78	@
9¼-ounce Peeler, carded		.73	@

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